

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 r 3

2. Edition

En

PES 6 P 120 A 720 LS 388 RQ 250/1050 PA 452

Komb.-Nr. 0 402 046 244

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.82

company: MAN

engine: D 2566 MKF  
235 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1  
(2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,1+0,1	21,7-22,0	0,5 (0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min 1	Control rod travel mm 2	Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications Control rod travel mm 9	rev/min 10	Control rod travel rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3 4,0 1350	1095-1110 1175-1205 0-1,0	250	6,4	100 250 340-380	min. 7,9 6,3 - 6,5 = 2,0	1100 750 890 960	11,3-11,4 13,1-13,2 12,7-12,9 11,7-12,0
VH = max. 46°											

Torque-control travel on flyweight assembly dimension a = 0,7 mm Speed regulation: At 1095-1110 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min	3a	Fuel delivery characteristics		3b	Starting fuel delivery Idle speed		6
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	6	rev/min	cm <sup>3</sup> /1000 strokes/mm	Control rod travel
LDA	1,0 bar		-	LDA	0,34 bar		100	205,0-225,0	
750	217,0-220,0 (214,0-223,0)			500	144,0-150,0 (141,0-153,0)			(201,0-229,0)	
LDA	1,0 bar			LDA	0 bar				
1050	180,0-186,0 (177,0-189,0)			500	101,0-104,0 (98,0-107,0)				

Checking values in brackets

7.83

A1

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

MAN 11,1 r 3 -2-

Pump/governor:	Setting	Measurement	Control rod travel-diminution, difference (1)
	Gauge pressure = bar	Gauge pressure = bar	mm
PES 6 P.. LS 388 mit RQ..PA 452	0,34	1,0 0 0,61	13,1-13,2 9,4-9,5 10,5-10,6 12,1-12,4

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ② Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 RVI 14,9 a

2. Edition

En

Testoil-ISO 4113

PES 8 P 120 A 320 RS 437 RQ 750 PA 596  
Komb.-Nr. 0 402 048 038

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je  $45^\circ \pm 0,5^\circ$  ( $0,75^\circ$ )  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 4.81  
company RVI  
engine MIVS (R) 083 530  
250 kW (340 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,80-2,90$   
 $(2,75-2,95)$  mm (from BDC) Cyl. 5

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
700	13,1+0,1	26,7 - 26,9	0,5(0,9)			
	5,0-5,2	1,5 - 2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
-	-	-	-	12,1 4,0 900	750-755 776-789 0 - 1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = mm Speed regulation At  $750-755 \text{ min}^{-1}$  <sup>1 mm less control rod travel</sup>

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	
700	267,0-269,0 (264,0-272,0)	-	-	-	-	100	19,5-21,0 mm RW	

Checking values in brackets

7.83

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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4 DAF 11,6 u 7

2. Edition

En

PE 6 P 110 A 720 RS 441      RSV 250-1200 P5 A 509  
Komb.-Nr. 0 401 876 301

supersedes 11.85  
company DAF  
engine DHS 825  
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

<sup>2,8-2,9</sup>

Port closing at prestroke (2,75-2,95)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1 000	12,2+0,1	13,7-13,9	0,4(0,75)			
250	5,0-5,2	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-0,7  X = 5,0	-	-	-	ca.24	250	4,6	1000	12,4-12,5
ca.58 (2a)	11,2 4,0 1500	1240-1250 1330-1360 0,3-1,4					250 535-595 = 2,0	5,0-5,2 7,0-12,0 (4,5-14,5)	400 300	12,4-12,6 12,7-13,2

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle	5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8
LDA 1000	0,7 bar 137,0-139,0 (134,5-141,5)	1240-1250*	LDA 600	0 bar 92,0-94,0 (89,5-96,5)	100 250	245,0-285 (241,0-289,0) 7,0-12,0 (4,5-14,5)	0 - -

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.86

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Testo II ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u. 7

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	Measurement Gauge pressure =	Control rod travel: mm (1)	diminution difference
PE 6 P..RS 441 + RSV..P5 A 509	0,70	0 0,36 0,27	12,2-12,3 10,3-10,4 11,7-11,8 10,6-11,0	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 15,2g5

1. Edition

En

PE6P 130 A 420 LS 484      RSVU 300-750 POA 347-3  
Komb.-Nr. 0 401 876 325

supersedes  
company  
engine

-  
KHD  
BA 6 M 816

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,0-2,1  
Port closing at prestroke      (1,95-2,15)      mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	5
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm		Intermediate rated speed 4      5      6			④ Control-lever deflection in degrees 7	Lower rated speed rev/min		③ Torque control Control rod travel rev/min 10	
	2	3	8	9			10	11		
loose	800	0,3-0,7 $x = 4,0$	-	-	-	ca. 24	300	5,7	750	15,0-15,1
ca. 53	14,0	790-800					300	5,6-5,8	280	16,3-16,9
②a	4,0	820-850					300-350=2,0		450	15,0-15,1
	980	0,3-1,4								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min	⑥ Rotational-speed limitat Note changed to ) rev/min	③a Fuel delivery characteristics rev/min	Starting fuel delivery idle rev/min	⑤ Idle stop Control rod travel rev/min			
1	2	3	4	6	7	8	9
Test specifications on request.	790-800*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 3

1. Edition

En

PE 12 P 130 A 920 RS 486      R SUV 300-1000 POA 348  
Komb.-Nr. 0 401 870 083

supersedes  
company KHD  
engine BA 12 M 816

1-10-5-7-2-11-6-8-3-12-4-9 je  $30^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke      (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	$X = 2,0$						300	5,6-5,8	280	16,2-16,8
ca. 67	14,0	1040-1050					325-385=2,0		450	15,0-15,1
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop	6 Rotational-speed limitat.	3a Fuel delivery characteristics	Starting fuel delivery idle	5	4a Idle stop
Test oil temp 40°C (104°F)	Note changed to ) rev/min	rev/min cm³/1000 strokes	rev/min cm³/1000 strokes	rev/min cm³/1000 strokes	rev/min cm³/1000 strokes
rev/min cm³/1000 strokes	3	4 5	6 7	8	9

Test specifications on request.

1040-1050\*

-

-

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 40,5 g 6

1. Edition

En

PE 8 P 130 A 920/5 RS 489 R SUV 300-750 POA 350-1

1-6 - 4 - 5 - 8 - 3 - 2 - 7

0-75-90-120-210-225-315-345° ±0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes KHD  
company BA 16 M 816  
engine Komb.-Nr. 0 401 878 138

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed rev/min		③ Torque control rev/min 10	Control rod travel mm	
	2	3	4	5	6		8	9		11	
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1	
	x = 4,0						300	5,6-5,8	280	16,2-16,8	
ca. 53	14,0	790-800					320-380 = 2,0		450	15,0-15,1	
②a	4,0	830-860									
	980	0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min	⑥ Rotational-speed limitat Note changed to ) rev/min		③a Fuel delivery characteristics rev/min		Starting fuel delivery Idle rev/min		⑤	④a Idle stop Control rod travel mm	
	1	2	3	4	5	6	7	8	9
LDA Test specifications on request. Pumps operates in tandem.	0,7 bar	790-800 *	-	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 40,5 h  
1. Edition

En

PE 8 P 130 A 920/5 RS 489      RS 250/1000 P.1 A 422 R  
1-6 - 4-5 - 8 - 3 - 2 - 7

0-75-90-120-210-225-315-345 ° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -  
company KHD  
engine BA 16 M 816  
Komb.-Nr. 0 401 878 134

## A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,8-6,0	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min			Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed			Torque control rev/min	Control rod travel mm
	Control rod travel mm	Control rod travel mm rev/min	2	4	5	6		rev/min	Control rod travel mm	8	9	
loose	800	0,3-0,7	x = 5,0	-	-	-	FHca. 24	250	5,9	1000	15,0-15,1	
VHca. 58	14,0	1040-1050						250	5,8-6,0	420	16,2-16,8	
FHmax.	4,0	1105-1135						400-460 = 2,0	550	550	15,0-15,1	
2a	1270	0,3-1,4										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)	6 Rotational-speed limitat Note: changed to ) rev/min		(3a) Fuel delivery characteristics rev/min		Starting fuel delivery Idle		(5)	(4a) Idle stop Control rod travel mm	
	1	2	3	4	5	6		7	
Test specifications on request. Pumps operates in tandem.	1040-1050*		-	-		-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.86

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 CAT 7,0 c

1. Edition

En

PES 4 P 80 A 720 LS 853 RQV 350/840-900 PA 726-1

Komb.-Nr. 9 400 087 349

supersedes -

company: Caterpillar  
engine: 3304 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75  
(1,60-1,80) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
880	14,0+0,1	19,0-19,1	0,25(0,4)			
350	5,9-6,1	0,9-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	1	
1	2	3	2a	4	5	6	7	8	9	3	10	11
max.	925	15,2-17,8		-	-	-	ca. 11	100	min. 8,0	350	0,5-1,5	
ca. 66	13,0	910-920						350	5,4-5,6	500	-	2,4-2,6
	4,0	940-970						500	2,4-3,6	750		
	1000	0 - 1,0						780-840	= 2,0	850	4,0-4,5	
										950	8,6	

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	2b	4b	5a	6	5
1	2	3	4	5	6	7
880	190,0-191,0 (188,5-192,5)	910-920 *	500	181,0-183,0 (179,0-185,0)	100	235,0-255,0 = 17,6-18,6 mm RW

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 SCA 11,0 r

7. Edition

En

PE 6 P 110 A 720 RS 3040

RQV 250-1100 PA 379 R

supersedes 3.84  
company: Scania  
engine. DS 1101

Komb.-Nr. 0 401 846 710

See page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>3,3-3,4</sup>  
<sup>(3,25-3,45)</sup> mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
600	13,0+0,1	16,1-16,3	0,6(0,8)			<sup>3,3 ± 0,1</sup> (3,0-3,5)
225	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Intermediate rated speed			Lower rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Sliding sleeve travel	
			①a	②a	③a	④	⑤	⑥	⑦	⑧
max.	1100	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 64	12,0	1140-1150					225	4,4-4,6	500	3,8-4,0
	4,0	1250-1280					310-370	= 2,0	800	5,4-5,6
	1400	0 - 1,0							1100	8,5

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min
LDA 600	0,9 bar 161,0-163,0 (159,0-165,0)	1140-1150*	LDA 1100	0,9 bar 153,5-158,5 151,0-161,0 0 bar 128,0-132,0 126,0-134,0	100	240,0-290,0 = 20,0-21,0 mm RW

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
 increasing

SCA 11,0 r -2-

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE 6 P..RS 3040 + RQV ... PA 379R	0,90	0 0,37 0,25	13,0 - 13,1 11,7 - 11,8 12,7 - 12,8 11,8 - 12,0	

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

### S U P P L E M E N T A R Y   I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 29.8.1983
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

# (2) Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 SAU 12,0 d  
2. Edition

En

PES 6 P 120 A 420 LS 3049 RQ 300/1000 PA 423 DR

supersedes 10.80

1 - 4 - 2 - 6 - 3 - 5 je  $60^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

company Saurer

Values only apply to test nozzle-and-holder assembly

engine D 4 KT

1 688 901 019 and fuel-injection test tubing 1 680 750 067

225 kW

Komb.-Nr. 0 402 046 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      3,20-3,30  
 (3,15-3,35)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	10,7+0,1	20,0-20,4	0,5(0,8)			
300	4,4-4,6	1,9-2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min	1	Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	4	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	5	Setting point rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
700	15,6-16,4	700	16,0	9,7 4,0 1200	1045-1060 1090-1120 0-1,0	300	4,5	100 300 400-440=2,0	min.5,9 4,4-4,6	1000 700 800 900	10,7-10,8 11,8-11,9 11,6-11,8 11,0-11,3

Torque-control travel  
on flyweight assembly dimension a =

mm

1045-1060 min

1 mm less control  
rod travel

Speed regulation: At

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	3	rev/min	cm³/-1000 strokes	6	cm³/1000 strokes/mm	7
1	2	4	5	6	7	6	7	6
LDA 1000	1,2 bar 200,0-204,0 (197,0-207,0)	-	-	LDA 700 LDA 400	1,2 bar 215,0-219,0 (212,0-222,0) 0 bar 102,0-106,0 (99,0-109,0)	100	215,0-235,0 =13,5-13,7 mm RW	

Checking values in brackets

7.83

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## D. Adjustment Test for Manifold Pressure Compensator

SAU 12,0 d -2-

Test at n = 500 rev/min decreasing increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel-dimension difference (1)
	Gauge pressure = bar	Gauge pressure = bar	mm
PES 6 P..LS3049 +RQ..PA 423 DR	1,2	0 0,45 0,25	11,8-11,9 8,4- 8,5 10,9-11,0 9,2- 9,3

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f

2. Edition

40

En

PE 6 P 120 A 320 RS 3071

RQV 250-1100 PA 371/2 R

supersedes 8.80

company: Volvo

engine: TD 120 G

Komb.-Nr. 0 401 846 725

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,6-2,7

(2,55-2,75)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
700	11,4+0,1	20,5-20,8	0,5(0,9)			
250	5,6-5,7	2,2-2,6	0,5(0,7)			2,5 <sup>+</sup> -0,1 (2,2-2,9) **

Adjust the fuel delivery from each outlet according to the values in

In the case of greater dispersion alter the delivery-valve spring pre-tension  
\*\* accordingly.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	1a	4	5	4	7	8	10	11
max.	1100	15,2-17,8	-	-	-	ca. 12	100	min. 7,1	200	0,7-0,9
ca. 46	10,4	1160-1170					250	5,6-5,7	500	2,9-3,2
	4,0	1235-1265					275-400		800	5,0-5,3
	1350	0 - 1,0				3a			1100	7,7

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point	Torque-control travel		
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0)	1160-1170 *	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

VOL 12,0 f - 2 -

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel mm (1)	diminution difference
PE 6 P..RS 3071 +RQV..PA371/2R	0,57		0,90 0 0,33		11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1	

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 12,0 f 6

1. Edition

En

PE 6 P 120 A 320 RS 3071-E RQV 300-1050 PA 371-1

Komb.-Nr. 0 401 846 780 E

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067supersedes  
company: Volvo-BM  
engine: TD 1206 BM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,6-2,7

(2,55-2,75)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	11,8+0,1	20,0-20,3	0,5 (0,9)			2,5+0,1 (2,2-2,9)
300	5,3-5,5	1,7-2,1	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		1
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	1
1	2	3	2a	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8		-	-	-	ca. 14	100	min. 6,8	250	1,1-1,3
ca. 43	10,8 4,0 1325	1105-1115 1190-1220 0 - 1,0					ca. 14	300 380-440 = 2,0	5,3-5,5	520 780 1050	3,1-3,5 5,0-5,3 7,5

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	rev/min
1	2	3	4	5	6	8
LDA 700	1,2 bar 200,0-203,0 (197,0-206,0)	1105-1115 *	LDA 700	0 bar 152,0-155,0 (149,0-158,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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## D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 f 6 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel	diminution difference
					mm	(1)
PE 6P..RS 3071-E +RQV...PA 371-1	1,20		0		11,8-11,9	
			0,91		9,4-9,5	
			0,40		11,6-11,7	
					9,6-9,8	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

②

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 11,4 i 3  
2. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3077 RQ 300/1100 PA 603  
 Values only apply to test nozzle-and-holder assembly  
 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 8.81  
 Daimler-Benz  
 company OM 407 HA  
 engine 206 kW (280 PS)  
 Komb.-Nr. O 402 046 727

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10  
 (3,95-4,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2+0,1	18,4 - 18,6	0,5(0,9)			
	5,0-5,2	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point rev/min 1	Control rod travel mm 2	Control rod travel mm 3	rev/min 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,1-20,8	650	20,0	10,7 4,0 1260	1145-1160 1190-1220 0 - 1	300	5,1	100 300 355-395=2,0	min. 6,5 5,0 - 5,2	1100 950 600	11,7 + 0,1 12,0 + 0,2 12,3 + 0,1

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes 7		
LDA 1100	0,75 bar 184,0 - 186,0 (181,0 - 189,0)		LDA 600 LDA 500	0,75 bar 187,0 - 193,0 (184,0 - 196,0) 0 bar 145,0 - 147,0 (142,0 - 150,0)	100	175,0 - 195,0 (171,0-199,0)		

Checking values in brackets

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7.83

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

MB 11,4 i 3

- 2 -

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel: mm (1)	diminution difference
.. LS 3077 mit	0,75				12,3 - 12,4	
.. PA 603			0,53		11,7 - 11,8	
			0,42		10,8 - 11,0	
			0		10,3 - 10,4	

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

② **Test Specifications  
Fuel Injection Pumps  
and Governors**

**40**

WPP 001/4 ROL 12,2 a  
3. Edition

En

**Testoil-ISO 4113**

PE 6 P 130 A 320 RS 3078      RQ 750 PA 584  
1 - 4 - 2 - 6 - 3 - 5 je  $60^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 8.81  
company Rolls Royce  
engine C 6 . 200 G  
Komb.-Nr. 0 401 846 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings**

Port closing at prestroke      3,4-3,5  
(3,35-3,55)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	11,7+0,1	26,7 - 27,1	0,5(0,9)			
300	4,9-5,0	3,8 - 4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings**

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	10,7 4,0 850	750-755 772-780 0-1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control  
rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery	
rev/min	cm³/-1000 strokes	Control rod stop		rev/min	cm³/-1000 strokes	rev/min	cm³/1000strokes	
1	2	4	3	5	6	7	6	7
700	267,0 - 271,0 (264,0 - 274,0)	-	-	-	-	-	100	290,0-340,0

Checking values in brackets

8.83

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② **Test Specifications  
Fuel Injection Pumps  
and Governors**

**40**

WPP 001/4 RVI 12,0 b  
2. Edition

En

**Testoil-ISO 4113**

PES 6 P 120 A 320 RS 3082 RQ 750 PA 597

Komb.-Nr. 0 402 046 723

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 8.81

company RVI

engine MIDS (R) 063540

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke      3,5 - 3,6  
(3,45-3,65)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
700	14,8+0,1	25,1 - 25,3	0,5(0,9)			
	6,5-6,7	1,50 - 2,10				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
-	-	-	-	13,8 4,0 900	750-755 787-800 0 - 1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery	
rev/min	cm³/-1000 strokes	rev/min	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000strokes	
700	251,0 - 253,0 (248,0 - 256,0)	-	-	-	-	-	-	

Checking values in brackets

8.83

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 SSC 19,0 b

2. Edition

En

PE 6 P 110 A 320 LS 3084

RQV 300-750 PA 614

Komb.-Nr. 0 401 846 750

supersedes 4.85  
company: SSCM  
engine: 6 L 150  
316 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,0+0,1	24,5-24,8	0,4(0,75)			
300	4,5-4,7	1,8-2,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	780	15,2-17,8	-	-	-	ca. 11	100	min. 6,1	275	1,3-1,5
ca. 66	12,0	790-800					300	4,5-4,7	600	5,3-5,8
	4,0	840-870					310-410		750	7,8-8,3
	950	0 - 1,0								

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	4a	5a	6	5
1	2	3	4	5	6	7
750	245,0-248,0 (242,5-250,5)	790-800 *	-	-	-	-
					300	18,0-23,0 (15,5-25,5)

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 PEN 12,0 d

2. Edition

En

PE 6 P 120 A 320 RS 3088 Z      RSV 200-900 P4/421 R  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 580 750 067

Supersedes 12.82  
company Volvo-Penta  
engine TMD 120 B  
Komb.-Nr. 0 401 876 725

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      2,6 - 2,7  
(2,55-2,75) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	11,7±0,1	19,3-19,7	0,5 (0,9)			2,5±0,1 (2,2-2,9)
250	3,6-3,8	1,6-2,0	0,5 (0,8)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,7	-	-	-	ca.22	250	3,2	-	-
	X = 4,0						250	3,6-3,8		
ca.53	10,7	940- 950					300-360 = 2,0			
2a	4,0	970-1000								
	1130	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle	5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8
700	193,0-197,0 (191,0-199,0)	940-950*	900	193,0- 197,0 (190,0-200,0)	100	390-440 = 20,0- 21,0 mmRW	250      3,7

Checking values in brackets

\* 1 mm less control rod travel than col 2

8.83

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 SSC 38,1 a

2. Edition

En

PE 12 P 110 A 520/6 LS 3090-1

Komb.-Nr. 0 401 830 700

1 - 8 - 5 - 10 - 3 - 7 - 6 - 11 - 2 - 9 - 4 - 12  
0 - 37,5 - 60-97,5-120-157,5-180-217,5-240-277,5-300-337,5° ± 0,5° (± 0,75°)

RQV 300-750 PA 614

supersedes 12.82

company. SSCM

engine. POYAUD V 12-150

530 kW (720 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,3+0,1	24,6-24,9	0,4 (0,75)			
300	4,7-4,9	1,8-2,4				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min	Control rod travel mm	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	Sliding sleeve travel ① rev/min mm
1	2	3	②a	4	5	6	④	7	8	9	③	10 11
max.	780	15,2-17,8		-	--	-		ca.10	100	min.6,3	300	1,3-1,5
ca.66	12,3 4,0 1000	790-800 835-865 0-1,0							300 4,7-4,9 325-385=2,0	600 750	5,3-5,8 8,1	
							③a					

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min ③		Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④ cm³/1000 strokes ⑤		Starting fuel delivery idle switching point ⑥ rev/min ⑦ cm³/1000 strokes ⑧		Torque-control travel ⑤ Control rod travel mm ⑨	
1	2	3	4	5	6	7	8	9	10
750	246,0-249,0 (243,5-251,5)	790-800*	-	-	-	300	18,0-24,0 (15,5-26,5)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.86

B1

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B1

# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 11,4 q

2. Edition

En

PES 6 P 120 A 820 LS 3112 RSV 350-1100 P0/500

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 1.83

company Daimler-Benz

engine OM407A

206 kW (280 PS)

Komb.-Nr. 0 402 076 718

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 mm (from BDC)  
(3,95-4,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,5+0,1	17,5-17,7	0,5 (0,9)			
350	4,7-4,9	1,6-2,2	0,8 (1,2)			
600	-	C, Sp. 4 u. 5	0,75(1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1 Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 25	350	4,8	-	-
	x = 3,25						420-460	= 2,0		
ca. 48 2a	10,5 4,0 1300	1135-1145 1215-1245 0,3-1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	4a Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
LDA 1100	0,7 bar 175,0-177,0 (172,0-180,0)	1135-1145*	LDA 600 LDA 500	0,7 bar 177,0-183,0 (174,0-186,0) 0 bar 143,0-145,0 (140,0-148,0)	100	150,0-170,0 (146,0-174,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.83

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## D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =		rev/min	decreasing pressure - in bar gauge pressure	increasing pressure - in bar gauge pressure		Control rod travel mm	diminution difference (1)	MB 11,4 q
Pump/governor	Setting	Gauge pressure =	bar	Gauge pressure =	bar			
PES6P..LS3112 + RSV..P0/500	0,70			0,40		11,8 - 11,9		
				0,50		10,7 - 10,9		
				0		11,6 - 11,7		
						10,5 - 10,6		

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 FOR 6,6 c

2. Edition

En

PES 6 P 110 A 720 RS 3149  
Komb.-Nr. 9 400 087 334

RQV 350-1300 PA 772

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes 10.85

company Ford

engine 6,6 l TC  
165 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35  
(4,20-4,40) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	13,1+0,1	10,5-10,7	0,5(0,9)			
350	7,2-7,4	1,6-2,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6	④	7	8	9	③	10	11
max.	1350	15,2-17,8		-	-	-		ca. 13	100	min. 9,0	350	0,6-1,3	
ca. 65	12,1	1360-1370							350	7,2-7,4	500	2,3-2,7	
	4,0	1505-1535							600-660 = 2,0	800	4,0-4,3		
	1650	0 - 1,0							370-440		1000	5,0-5,3	
											1300	7,3	

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	④a	4	5	6	7	8	9
LDA	1,0 bar	1360-1370 *		LDA	1,0 bar	100	100,0-120,0	-	-
1300	105,0-107,0			600	103,5-107,5		(96,0-124,0)		
	(102,0-110,0)			(91,5-109,5)			=20,0-21,0		
				0 bar			mm RW		
				500	76,5-78,5	350	16,0-20,0		
					(73,5-81,5)		(13,5-22,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing pressure - in bar gauge pressure

FOR 6,6 c

- 2 -

Pump/governor	Setting  Gauge pressure =	bar	Measurement  Gauge pressure =	bar	Control rod travel-diminution difference	
					mm	(1)
PES 6 P..RS 3149 + RQV..PA 772	1,0		0		13,1-13,2	
			0,70		11,6-11,7	
			0,50		12,7-12,8	
					12,0-12,2	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 16,0 d 1

1. Edition

En

PE 10 P 110 A 920/5 LS 3164 RQV 300-900 PA 790-1  
Komb.-Nr. 0 401 849 7241-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2  
0-27-72-99-144-171-216-243-288-315° ±0,5° (±0,75°)supersedes -  
company: KHDengine: BF 10 L 513  
218 kW/1800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,8-2,9  
(2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	11,4+0,1	11,7-11,9	0,4 (0,75)			
300	6,4-6,6	1,2-1,8	0,45 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	Control rod travel mm	Control rod travel rev/min	Intermediate rated speed			Lower rated speed			Sliding sleeve travel ① rev/min	mm
			②a	②b	③	④	⑤	⑥		
max.	920	15,2-17,8	-	· ·	-	ca. 18	100	min. 7,9	250	1,1-1,2
ca. 55	10,4	940-950					300	6,4-6,6	470	3,1-3,3
	4,0	985-1015							680	5,1-5,3
	1100	0 - 1,0					320-450	(3a)	900	8,1

Torque control travel a = 0,40 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)			Rotational-speed limitation intermediate speed		Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel		
rev/min	cm³/1000 strokes	②	②b	③	④a	⑤a	⑤b	⑥	⑦	⑧	⑨
900	117,0-119,0 (114,0-122,0)		940-950*		-	-	-	100	135,0-165,0	650 900 800	11,9+0,1 11,4+0,1 11,6+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4 86

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MAN 11,9 d

1. Edition

En

PES 6 P 120 A 720 LS 3167

RQV 300-1000 PA 667-2

Komb.-Nr. 0 402 046 769

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: MAN

engine: D 2866 LE

300 kW

MAN-Nr.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke		3,8-3,9 (3,75-3,95)	mm (from BDC)	Cyl. 6	
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes
1100	12,6+0,1	23,4-23,6	0,5 (0,9)		
	300	5,9-6,1	0,8 (1,2)		

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6	④	7	8	9	③	10	11
max.	1175	15,2-17,8	-	--	-	-	ca. 17	100	min. 7,5	300	1,2-1,4		
ca. 53	11,6	1140-1150						300	5,9-6,1	500	3,3-3,5		
	4,0	1245-1275						330-445		900	5,9-6,2		
	1400	0 - 1,0								1100	7,7		

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	②b	high idle speed rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	④b	4	5	6	7	8	9
1100	234,0-236,0 (231,0-239,0)	1140-1150 *	-	-	-	100	210,0-230,0 (206,0-234,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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# ② Test-Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 17,2 b  
1. Edition

En

PE 8 P 120 A 920/5 LS 3804 RQ 300/950 PA 474  
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je  $45^{\circ}$  +  $0,5^{\circ}$  ( $+0,75^{\circ}$ )  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -  
company: Fiat  
engine: 8280.22.007  
280 kW  
Komb.-Nr. 0 401 848 726

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      3,5 - 3,6  
(3,45-3,65)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min	1	Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point rev/min	Control rod travel mm	Test specifications rev/min	4	Setting point rev/min	Control rod travel mm	Test specifications rev/min	5	Control rod travel rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH = max 46°	19,2-20,8	600	20,0	10,1 4,0 1150	995-1010 1030-1060 0 - 1,0	300	5,0	100 300 350-390= 2,0	min. 7,5 4,9-5,1	950 600	11,1-11,2 11,1-11,3

Torque-control travel  
on flyweight assembly dimension a = 0 mm      Speed regulation: At 995-1010 min⁻¹      1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)	2	Control rod stop		Fuel delivery characteristics			Starting fuel delivery Idle speed		6
		rev/min	cm³/-1000 strokes	3	rev/min	cm³/-1000 strokes	4	rev/min	cm³/1000 strokes/mm
1	2	3	4	5	6	7	8	9	10
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	-	LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)	11	12	13

Checking values in brackets

9.83

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Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing increasing pressure - in bar gauge pressure

FIA 17,2 b - 2 -

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel- mm (1)	diminution difference
PE 8 P.. LS 3804 + RQ..PA 474	0,70		0		11,1 - 11,2	
			0,36		8,3 - 8,4	
			0,29		10,4 - 10,5	
					8,8 - 9,2	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 FIA 17,2 b 1

1. Edition

En

PE 8 P 120 A 920/5 LS 3804 RQV 300-950 PA 475 R  
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° + 0,5° (+ 0,75°)  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes  
company: Fiat  
engine: 8280.22

280 kW

Komb.-Nr. 0 401 848 730

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,5 - 3,6  
(3,45-3,65) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	8
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			
950	8,3-8,4	C,Sp. 4 u. 5	(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	Control rod travel			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
	rev/min	Control rod travel mm	rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
max.	950	15,2-17,8	-	1a	.	-	ca. 11	100	min. 7,5	250	1,0-1,3
ca. 64	10,1	990-1000		2a	4	5	300-390	300	5,9-6,1	480	3,7-4,2
	4,0	1075-1105								720	5,6-5,9
	1250	0 - 1,0								950	7,7

Torque control travel = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation Intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	8	7	8	9
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	990-1000*	LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

FIA 17,2 b 1 -2-

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel-dimension difference	
					mm	(1)
PE 8 P..LS 3804 + RQV..PA 475 R	0,70		0		11,1 - 11,2	
			0,36		8,3 - 8,4	
			0,29		10,4 - 10,5	
					8,8 - 9,2	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ② Test-Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6h2

2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 900 PA 310 R  
Komb.-Nr. 0 401 848 743  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.81  
company: Daimler-Benz  
engine: OM 422 A  
229 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

4,9 - 4,1  
Port closing at prestroke (3,95-4,15) mm (from BDC) cyl. 8

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
850	12,0+0,1	17,9-18,1	0,5(0,9)			
	300	4,8-5,0	1,2- 2,0	0,8(1,2)		

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min mm	Full-load speed regulation				Idle speed regulation				Torque control	
	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
- -	-	-	11,0	900-905	-	-	-	-	-	-
			4,0	945-955						

Torque-control travel on flyweight assembly dimension a =  mm Speed regulation: At  $900-905 \text{ min}^{-1}$  1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes/mm
850	179,0 - 181,0 (176,0 - 184,0)	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

9.83

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②

# Test-Specifications Fuel Injection Pumps ② and Governors

40

WFP 001/4 MB 14,6h

2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 1050 PA 310

Komb.-Nr. 0 401 848 742

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.81

company: Daimler-Benz

engine: OM 422 A

228 kW (310 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1  
(3,95-4,15) mm (from BDC) cyl 1.8

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1000	11,3+0,1	17,3 - 17,5	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	10,3	1050-1055	-	-	-	-	-	-
				4,0	1090-1105						

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At  $1050-1055 \text{ min}^{-1}$  1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	3	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes/mm
1000	173,0 - 175,0 (170,0 - 178,0)	-	-	-	100	180,0 - 200,0 (176,0 - 204,0)

Checking values in brackets

9.83

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B13

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6b3  
2. Edition

En

PE 8 P 120 A 320 LS 3807      RQ 750 PA 374 R  
Komb.-Nr. 0 401 848 741  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

supersedes 10.82  
company: Daimler-Benz  
engine: OM 422 A  
196 kW (266 PS)

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      4,0 - 4,1      mm (from BDC)      cyl. 8; RW = 9,0 - 12,0 mm  
(3,95-4,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,1+0,1	18,4 - 18,6	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,1	750-755	-	-	-	-	-	-
				4,0	785-795						

Torque-control travel  
on flyweight assembly dimension a =      mm      750-755 min  $^{-1}$       1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	3	rev/min	cm³/-1000 strokes	6	cm³/1000 strokes/mm	Control rod travel
1	2	4	5	6	7	Control rod travel	Control rod travel	
700	184,0 - 186,0 (181,0 - 189,0)	-	-	-	-	100	180,0-200,0 (176,0-204,0)	

Checking values in brackets

9.83

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# ② Test-Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6 g 1

En 5. Edition

PE 8 P 120 A 320 LS 3807  
Komb.-Nr. 0 401 848 747

RQ 300/1150 PA 511-2

supersedes 1.83

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

company: Daimler-Benz

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

engine: OM 422 LA

276 kW (375 PS)

Testoil-ISO 4113

**A. Fuel Injection Pump Settings**Port closing at prestroke 4,00-4,10  
(3,95-4,15) mm (from BDC)

Cy1.8

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	11,6+0,1	18,9 - 19,1	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			
1150	-	C, Sp. 1u. 2	0,75			
600	-	C, Sp. 4u. 5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in [ ]

**B. Governor Settings**

Checking of slider PRG check Control rod travel rev/min	1	Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point rev/min	Control rod travel mm	Test specifications rev/min	4	Setting point rev/min	Control rod travel mm	Test specifications rev/min	5	Control rod travel mm	3
1	2	3	4	5	6	7	8	9	10	11	12
600	19,1 - 20	8 600	19,9	10,6	1195-1210	300	4,3	100	min. 6,0	-	-
VII	- max. 46			4,0	1250-1280			300	4,2-4,4		
								335-375	=2,0		

Torque-control travel  
on flyweight assembly dimension a = mm Speed regulation: At 1195 - 1210 min⁻¹ 1 mm less control rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		2	Control rod stop rev/min	3a	Fuel delivery characteristics		3b	Starting fuel delivery idle speed		6
rev/min	cm³/-1000 strokes	2	3	4	5	rev/min	6	cm³/1000 strokes/mm	7	Control rod travel mm
LDA	0,7 bar					LDA	100	140,0 - 160,0		
900	189,0 - 191,0 (186,0 - 194,0)			-		600		(136,0-164,0)		
LDA	0,7 bar					LDA				
1150	185,0-189,0 (182,0-192,0)					500				

Checking values in brackets

9.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

MB 14,6 g1

- 2 -

Pump/governor	Setting		Measurement		Control rod travel- mm	diminution difference (1)
	Gauge pressure =	bar	Gauge pressure =	bar		
PE 8 P..LS 3807 + RQ..PA 511-2	0,44					11,1 - 11,3
			0,70			11,6 - 11,7
			0			10,1 - 10,2
			0,34			10,3 - 10,4

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 1 1  
3. Edition

40

PE8P120A320LS3807 RQV 300-1150PA526-2  
1-8-7-2-6-3-5-4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 1.83  
company: Daimler-Benz  
engine: OM 422 LA  
276 kW (375 PS)  
Komb.-Nr. 0 401 848 748

En

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

4,0-4,1  
(3,95-4,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			
1150	-	C, Sp. 1 u. 2	0,75			
600	-	C, Sp. 4 u. 5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	Control rod travel mm			Intermediate rated speed Degree of deflection of control lever			Lower rated speed Degree of deflection of control lever			Sliding sleeve travel ①	
	1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	--	-	-	ca. 10	100	min. 6,0	250	1,0-1,2
ca. 65	10,6	1190-1200	4,0	1230-1260	1350	0- 1,0	320-465	300	4,2-4,4	550	3,4-3,7

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm³/1000 strokes	rev/min	④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	LDA 600	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0 (136,0-164,0)	-	-	-
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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## D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 1 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel- mm (1)	diminution difference
PE8P..LS3807 + .. PA526-2	0,44		0,70 0 0,34		11,1-11,3 11,6-11,7 10,1-10,2 10,3-10,4	

, when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# ② Test-Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 21,9 a 1

2. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634

supersedes 3.83

1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 - 12

company: Daimler-Benz

0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315° ± 0,5° (± 0,75°)

engine OM 424 A

374 kW

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr.

0 401 840 704

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**Testoil-ISO 4113**

Port closing at prestroke

4,0 - 4,1  
(3,95-4,15)

mm (from BDC)

Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
850	11,8+0,1	18,3-18,5	0,5 (0,8)			
300	4,8-5,0	1,2-2,0				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min	1	Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	11	12
-	-	-	-	10,8 4,0 1050	900-905 932-942 max. 1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = mm Speed regulation: Ai 900 - 905 min⁻¹ 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min		Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min	cm³/-1000 strokes	3	4	5	6	7	Control rod travel mm
850	183,0-185,0 (180,0-188,0)	-	-	-	100	160,0-180,0 (156,0-184,0)	

Checking values in brackets

9.83

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# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 00 1/4 MB 21,9a

4. Edition

En

Testoil-ISO 4113

PE 12 P 120 A 320 LS 3819

RQ 750 PA 635

supersedes 3.83

company: Daimler-Benz

engine: OM 424 A

330 kW (449 PS)

Generating sets

Komb.-Nr. 0 401 840 705

1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12  
0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (+0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel injection Pump Settings

Port closing at prestroke		4,00-4,10 (3,95-4,15)		mm (from BDC)		Cyl. 12	
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm	
700	11,9±0,1	19,3 - 19,5	0,5(0,8)				
	300	4,8-5,0	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Control rod travel mm	Control rod travel mm	
-	-	-	-	10,9 4,0 900	750-755 780-790 0 - 1,0	-	-	-	-	-	

Torque-control travel  
on flyweight assembly dimension a = mm Speed regulation: At 750-755 min 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes/mm	
700	193,0 - 195,0 (190,0 - 198,0)	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)	

Checking values in brackets

9.83

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 SCA 14,2 d 2  
2. Edition

En

PE 8 P 120 A 920/4 LS 7008 X RQV 200-950 PA 547-0  
Komb.-Nr. 0 402 648 8151-2-7-3-4-5-6-8 je  $45^\circ + 0,5^\circ (+ 0,75^\circ)$ 

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 1.86

company: Saab-Scania  
engine: DSC 14 02

3  
1  
4  
5  
6  
7  
8  
9  
10  
11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      4,5-4,6  
(4,45-4,65)      mm (from BDC) ; RW = 6,0-8,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,1+0,1	18,7 - 18,9	0,7 (1,0)			3,3+0,1 (3,0-3,5)
225	4,5-4,7	1,4 - 1,8	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	Control rod travel mm	Control rod travel rev/min	Intermediate rated speed			Control rod travel mm	Control rod travel rev/min	Lower rated speed			Control rod travel mm	Sliding sleeve travel rev/min
			18	2a	4			7	8	9		
1	2	3			4	5	6	7	8	9	10	11
max.	990	15,2-17,8	-	--	-			ca. 10	100	min. 5,9	200	1,0-1,2
ca. 60	12,1	990-1000							225	4,4-4,6	450	3,3-3,8
	4,0	1110-1140							310-370	=2,0	700	5,0-5,2
	1250	0 - 1,0									950	7,9

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	4a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 700	0,9 bar 187,0-189,0 (184,0-192,0)	990-1000 *		LDA 950	0,9 bar 181,0-189,0 (179,0-191,0)	100	250,0-300,0 =20,0-21,0 mm RW	-	-
				LDA 500	0 bar 156,0-160,0 (154,0-162,0)	225	4,4-4,6 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.06

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## D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 d 2

- 2 -

Test at n = 500 rev/min decreasing pressure ~ in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	bar	Gauge pressure =	bar mm (1)
PE8P..LS 7008 X +RQV..PA 547-6	0,90	0 0,29 0,24	13,1 - 13,2 11,4 - 11,6 12,7 - 12,8 12,1 - 12,3	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full load control rod travel)

### S U P P L E M E N T A R Y   I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 3.5.1985
- Start of fuel delivery-engine: 22° before TDC at RW = 6,0-8,0 mm
- Firing sequence, engine : 1-5-4-2-6-3-7-8
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 nm.

# Test Specifications Distributor-type Fuel-injection Pumps

VE 6/10 F 2400 L 116-1  
0 460 406 019

Overflow temperature 45° C

supersedes 5.84  
company: VW  
engine: 087 - T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,4-1,8 mm	0,75	
1.2 Supply-pump pressure	1500	5,7-6,3 bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	26,5-27,5 cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,0-44,0 cm³/1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation	415	6,0-10,0 cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	100	min. 42,0 cm³/1000 strokes	0	
1.6 Start	2675	10,0-16,0 cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing				

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1200 0,2-1,0(0-1,3)	1500 (0,9-2,3)	2400 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm²)	600 3,3-3,9		2400 7,8-8,4
Overflow delivery	n = rev/min cm³/10 s	600 55-138(40-153)		2400 (0,75 bar) 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	for assembly and adjustment mm
End stop	2825 2675 2400 1500 800 *600	max. 6,0 (9,0-17,0) 35,6-37,6 (34,3-38,9) (42,2-46,8) 33,5-34,5 (31,0-37,0) (24,0-30,0)	0,75 0,75 0,75 0,75 0,30 0	K KF MS SVS	3,2-3,4 6,3-6,6 1,7-1,9 2,4
switch-off mech. electr.	2400 400	0 0		A <sup>X</sup> K B <sup>X</sup> L	21,8-23,8 9,4-12,7
idle stop	415 750	max. 3,0 (4,0-12,0)			
End stop	400 500	min. 20 max. 30			
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12 V		Observations * LDA-stroke 4,2 mm Use adjusting nut (46) to correct.	

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 FIA 8,1c

En 2. Edition

PES 6 MW 90/720 RS 1005

RQV 300-1300 MW 9 DR

0 403 446 107

supersedes 3.83

company: Fiat

engine 8360.05.670

117,7 kW (160 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery 5,10-5,20  
(5,05-5,25) mm (from BDC)

RW = 5,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	11,7+0,2	8,9-9,1	0,3(0,5)			
300	3,8-4,0	0,95-1,35	0,3(0,5)			
800	12,4+0,2	8,9-9,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed				Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	1
1	2	3	2a	4	5	6	7	8	9	10	11
max.	1300	15,2-17,8		-	-	-	ca.21	300	3,8-4,0		
	1400	0-1,0						100	min.7,0		
ca.60°	10,8	1350-1360						350-390=2,0			
	4,0	1420-1460									

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	4a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1300	89,0-91,0 (88,0-92,0)	1350-1360*	800	89,0-91,0 (88,0-92,0)	100	20,0-21,0 (min. 130)	900	12,4+0,2	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.80

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# Test Specifications

## Distributor-Type

## Fuel Injection Pump

46

WPP 001/4 PEN 0,6a

3. Edition

En

Testoil-ISO 4113

VA 2/100 H 1200 CL 162  
0 460 302 006

supersedes 6.82

company Volvo-Penta  
engine X2

Pre-stroke setting  $0,3 \text{ mm} \pm 0,02 (\pm 0,04)$   
plunger lift of 0.36 mm related to outlet "B".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,3 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	27,5-28,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	9,0-17,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400-510(370-540)	1000	1100-1250
	Start		(3,2-4,6)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,2-1,7(1,0-1,9)	1000 (4,7-5,6)	1200 5,6-6,1(5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 55-100(40-110)		1200 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340) 1250 1150 1000 500	0 26,5-28,5 (25,5-29,5) 18,0-21,0 (27,0-29,0) (17,0-22,0)	
	Stop	1200	0	
Idle stop	Full	270-320 (250-340) 250 100	0 (6,0-14,0)	
	Start		mind. 85,0	
End stop		150-250		

C1

6.86

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C1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 20 \pm 4^\circ</math></p> <p><math>\beta = 25 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 4,5 mm</p> <p>Dimension IV = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PEN 0,6b

3. Edition  
En

VA 2/100 H 1300 CL 162-1  
0 460 302 008

supersedes 6.82  
company PENTA  
engine MO 7A

Pre-stroke setting 0.3 mm  $\pm$  0.02 ( $\pm$  0.04)  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "B".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,3 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	31,5-32,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	9,0-17,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets			
		400-510(570-540)	700	1000	1100-1250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	Start 200 1,2-1,7(1,0-2,9)	1,2-2,2(0,9-2,5) (3,2-4,5)	4,3-5,0(4,0-5,3)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1000 (4,7-5,6) 6,0-6,5(5,8-6,7)	1300
					1300 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440) 1350 1310-1330 1280 1000 500	0 (8,0-18,0) Start 28,5-30,5 (27,5-31,5) (31,0-33,0) 21,5-24,5 (20,5-25,5)	
	Stop	1300	0	
Idle stop	Full	270-320 (250-340) 250	0 (6,0-14,0)	
	Start	100	mind. 85,0	
End stop		150-250		

Testoil-ISO 4113

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6.86

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 30 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV 4,5 mm</p> <p>Dimension V 24,65 mm</p>

# ⑥ Test Specifications Distributor-type Fuel-injection Pumps

**46**

WPP 001/4 VOL 3,6 n 1

2. Edition

En

VE 6/11 F 1800 L 18

Overflow temperature 45° C

0 460 416 001

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A"

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes 3.83  
company: Volvo  
engine:

Pre-stroke setting 0,2 mm  $\pm 0,02(0,04)$

Test Instructions and Test Equipment  
see VDT-W-460/..

**Testoil-ISO 4113**

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,2-3,6 mm	0,74	
1.2 Supply-pump pressure	1500	6,0-6,7 bar (kgf/cm <sup>2</sup> )	0,74	
1.3 Full-load delivery with charge-air pressure	500	47,0-49,0 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	63,5-64,5 cm <sup>3</sup> /1000 strokes	0,74	3,0
1.4 Idle regulation	325	8,0-12,0 cm <sup>3</sup> /1000 strokes	0	2,0
1.5 Full-speed regulation	100	min. 72,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2040	19,5-25,5 cm <sup>3</sup> /1000 strokes	0,74	
1.7 Load-dependent port-closing				

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device LDA = 0,74 bar	n = rev/min mm	1000 0,7-1,7(0,5-1,9)	1500 (2,7-4,1)	1800 4,5-5,3(4,2-5,6)
2.2 Supply pump LDA = 0,74 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	400 2,0-2,7		1800 6,9-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1800 55-110(40-125)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	Dimensions for assembly and adjustment mm
End stop	2140-2220 2120 2040 1800 1500 * 500 500	0 max. 6,0 (18,0-27,0) (55,8-61,2) (61,3-66,7) (49,1-55,9) (44,6-51,4)	0,74 0,74 0,74 0,74 0,74 0,28 0	K KF MS SVS	- 5,9-6,2 1,5-1,7 max.4,2
switch-off	1800	0		A	5,8-10,8
idle stop	370-450 325	0 (5,5-14,5)		B	10,4-15,6
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V.			Observations	
				* LDA-stroke 4,0 mm Use adjusting nut (46) to correct.	

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12.85

# Test Specifications

## Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/12 F 1350 R 64

0 460 426 016      Overflow temperature 45° C  
 Setting of the pointer at a stroke of 1 mm in  
 relation to outlet "A".

supersedes 9.85  
 company: IHC  
 engine: D 358/PC 11

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

DHK: 1 688 901 020

Pre-stroke setting

mm 172+3

bar

Test Instructions and Test Equipment  
 see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1150	5,2-5,6	mm	
1.2 Supply-pump pressure	1150	5,6-6,2	bar (kgf/cm²)	
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes	
Full-load delivery without charge-air pressure	1150	84,0-85,0	cm³/1000 strokes	3,5 (4,5)
1.4 Idle regulation	500	14,5-20,5	cm³/1000 strokes	3,5 (4,5)
1.5 Full-speed regulation	1430	44,0-50,0	cm³/1000 strokes	
1.6 Start	100	min. 100,0	cm³/1000 strokes	
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device	n = rev/min mm	600 1,6-2,4(1,3-2,7)	1150 (4,7-6,1)	1300 5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,7-3,3		1300 6,0-6,6
Overflow delivery	n = rev/min cm³/10 s	500 55-138(40-163)		1350 55-138(40-158)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	for assembly and adjustment mm
End stop	1540 1480 1430 1300 1150 800 500	max. 2,0 9,0-17,0 (8,0-18,0) (42,0-52,0) 80,0-83,0(78,5-84,5) (81,5-87,5) 77,0-81,0(76,0-82,0) 65,0-70,0(63,7-71,3)		K KF MS SVS	3,2-3,4 5,7-5,9 1,0-1,2 max. 6,0
switch-off				A XK B XL	20,2-22,2 15,8-19,8
Idle stop	570 520 500	max. 1,0 min. 4,0 (12,5-22,5)			
End stop	250 350	min. 100 max. 800			
2.4 Solenoid	—	cut-in voltage min. 10 V rated voltage 12 V.		Observations	

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# ⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FOR 2,5a

1. Edition

En



VE 4/11 F 2000 R 119 R119-1

0 460 414 007 ...013

DHK 1 688 901 023

Fuel injection test tubing 6x2x450 mm

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes Ford  
company: Triton  
engine:

Pre-stroke setting

mm Overflow temperature 45° C

Test Instructions and Test Equipment  
see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,7-3,1	mm	
1.2 Supply-pump pressure	1400	5,7-6,5	bar (kgf/cm²)	
1.3 Full-load delivery with charge-air pressure	F 500	33,5-34,5	cm³/1000 strokes	
Full-load delivery without charge-air pressure	E 1000	39,5-40,5	cm³/1000 strokes	3,5 (4,0)
1.4 Idle regulation	415	9,0-11,0	cm³/1000 strokes	3,0 (4,0)
1.5 Full-speed regulation	2200	15,0-17,0	cm³/1000 strokes	
1.6 Start	100	min. 70,0	cm³/1000 strokes	
1.7 Load-dependent port-closing				

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device	n = rev/min mm	See page 2
2.2 Supply pump	n = rev/min bar (kgf/cm²)	1900-1000 min⁻¹ Supply-pump pressure difference 2.4 - 2.8 bar
Overflow delivery	n = rev/min cm³/10 s	500 55-138 (40-153)      2000 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	for assembly and adjustment mm
End stop	2350 2300 2200 D 2000 1000 F 500	max. 8,0 2,0-12,0 (11,5-20,5) 37,0-40,0 (35,9-41,1) (37,4-42,6) 33,5-36,5 (31,6-38,4)		K K <sub>OT</sub> MS SVS	3,2-3,4 0,6-0,8 1,7-1,9 4,7
switch-off electr.	415	max. 3,0 (Control lever in idle position)		A <sub>XX</sub> B <sub>XL</sub>	18,0-20,0 10,4-13,8
Idle stop	415 500	(5,5-14,5) 3,5-8,5 (1,5-10,5)			
End stop	300 480	min. 40 max. 37			
2.4 Solenoid	cut-in voltage rated voltage	min. 10 Volt 12 V.		Observations See page 2!	

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10.86

### 2.1 Timing device

$n = \text{min}^{-1}$	mm	Voltage at thermostat
1000 (10)	0.9-1.7 (0.6-2.0)	12 Volt
1200 (10)	1.7-2.7 (1.5-2.9)	12 Volt
1400 (10)	(2.7-4.1)	12 Volt
1650 (10)	4.8-5.8 (4.6-6.0)	12 Volt
1900 (10)	7.0-8.0 (6.8-8.2)	12 Volt
* 500 (11)	4.1-4.9 (3.8-5.2)	0 Volt
* 1250 (12)	5.1-7.1	0 Volt

\* Note:

Screw out ball-type valve by 2 mm

#### Remarks:

Coordination, pump with engine piston stroke in lock position at 3 mm  
timing-device travel  $0.64 \pm 0.2$  mm

Hydraulically actuated torque control stroke =  $10 \pm 0.1$  mm

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5m

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2100 R 214  
0 460 494 173

Overflow temperature 45° C

supersedes  
company: Sofim  
engine: 8144.67.2000

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm  $\pm$  0,02(0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1100	3,5-3,9	mm	
1.2 Supply-pump pressure	1100	4,7-5,3	bar (kgf/cm²)	
1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure	-		cm³/1000 strokes	
1.4 Idle regulation	1100	41,5-42,5	cm³/1000 strokes	max. 2,5
1.4 Idle regulation	400	11,0-15,0	cm³/1000 strokes	max. 2,5
1.5 Full-speed regulation	2350	19,0-25,0	cm³/1000 strokes	
1.6 Start	100	min. 60	cm³/1000 strokes	
1.7 Load-dependent port-closing	1100			

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device	n = rev/min mm	700 0,8-1,6(0,5-1,9)	1100 (3,0-4,4)	2000 8,6-9,4(8,3-9,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	700 3,5-4,1		2000 7,0-7,6
Overflow delivery	n = rev/min cm³/10 s	600 41-86(26-98)		55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation for assembly and adjustment mm
End stop	2550 2450 2350 2100 2000 1100 600	max. 3,0 6,5-13,5 (6,0-14,0) (18,0-26,0) 41,9-44,9 (41,1-45,7) (41,2-45,8) (39,7-44,3) 36,0-39,0 (34,5-40,5)		K - KF 5,2-5,5 MS 1,7-1,9 SVS 4,3
switch-off				A B
Idle stop	400 450 700 1000	( 9,0-17,0) 2,0- 8,0 ( 1,0- 9,0) 1,5- 7,5 ( 0,5- 8,5) max. 2,5		Observations
Endanschlag	250 400	min. 55,0 max. 50,0		
2.4 Solenoid	cut-in voltage rated voltage	min. 10 V 12 V.		

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MWM 5,9a4  
1. Edition

PES 6 A 80 D 320 RS 1271 RSV 350-1500 AOB 2207 R

Komb.-Nr. 9 400 085 250

En

supersedes  
company MWM  
engine D 229-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,2-2,3

Port closing at prestroke

(2,15-2,35)

mm (from BDC)

Testo-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1500	9,5-9,6	5,5-5,6	0,25(0,4)			
350	6,9-7,1	0,9-1,2	0,4(0,35)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 18	350	6,5	1500	9,5-9,6
	x = 1,25						100	min. 19,0	500	9,5-9,7
ca. 55	8,5	1540-1545					350	6,9- 7,1	400	10,7-11,3
(2a)	4,0	1580-1590					430-490	=2,0		
	700	0,3- 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp 40°C (104°F)	rev/min	Note changed to )	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1500	54,5-55,5 (53,0-57,0)	1540-1545*	500	40,5-42,5 (38,5-44,5)		100	19,0-21,0 mm RW	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.86

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MWM 3,9b3

1. Edition

En

PES 4 A 80 D 320 RS 1282 RSV 350-1500 AOB 2207 R

Komb.-Nr. 9 400 085 249

Supersedes  
company MWM  
engine D 229-4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,2-2,3

Port closing at prestroke

(2,15-2,35)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1500	9,5-9,6	5,5-5,6	0,25(0,4)			
350	6,9-7,1	0,9-1,2	0,4(0,35)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
loose	800	0,3-1,0	-	-	-	ca. 18	350	6,5	1500	9,5-9,6	
	x = 1,25						100	min. 19,0	500	9,5-9,7	
ca. 55	8,5	1540-1545					350	6,9- 7,1	400	10,7-11,3	
2a	4,0	1580-1590					430-490=2,0				
	1700	0,3- 1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limitat Note changed to .. rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
1500	54,5-55,5 (53,0-57,0)	1540-1545*	500	40,5-42,5 (38,5-44,5)		100	19,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
5.86

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 m 3

1. Edition

PES 6 A 80 D 410 RS 2085 Y

EP/RSV 350-1200 A2B 713 DL

En

supersedes  
company Daimler-Benz  
engine OM 352  
114 PS/2400 min<sup>-1</sup> (1)  
143 PS/2400 min<sup>-1</sup> (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,15-2,25

Port closing at prestroke

(2,10-2,30)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,0	4,3-4,8	0,3			
	6,0	1,8-2,6				
	15,0	10,2-11,4				
	9,0	2,3-3,3				
200						

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings (1)

1	Upper rated speed rev/min		4	Lower rated speed		Torque control	
Degree of deflection of control lever	Control rod travel mm		Control-lever deflection in degrees	Control rod travel mm			
1	2	3	7	8	9	10	11
ca. 52	1300	16,0	without auxiliary spring	ca. 20	350	7,5	1180
	1360	11,8			100	19,0-21,0	800
	1420	6,8			350	7,3-7,7	500
	1400	7,2-8,6			500	4,4-6,8	
(2a)	1450	4,8-6,4	with auxiliary spring		650	1,4-3,6	0,6-0,8
	1500	2,6-4,8			780	0-1,0	
	1620	0-1,0					

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop	6	Rotational-speed limitat	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop
Test oil temp 40°C (104°F)	rev/min	cm <sup>3</sup> /1000 strokes	Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	9
(1)	1180	54,5-57,0 (53,5-58,0)	1210-1220*	800	50,0-53,0 (48,5-54,5)	100	142,0-148,0	350	7,5
				500	49,5-52,5 (48,0-54,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.86

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## B. Governor Settings

(2)

MB 5,7 m 3

- 2 -

1A

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 44	1200	16,0				ca. 15	350	6,0	1180	0
	1250	10,7	without auxiliary spring				100	19,0-21,0	800	0,2-0,4
	1300	4,8	with auxiliary spring				350	5,7-6,3	400	0,8-1,0
ca. 42	1200	ca. 5,0					600	1,8-3,8		
(5)	1300	ca. 1,0					850	0-1,0		
	1450	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
(2) 1180	72,5-74,5 (72,0-75,0)	1210-1230*	800	70,5-73,5 (69,0-75,0)	100	137,0-143,0	-	-
			(6a) 500	70,5-73,5 (69,0-75,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113**

## B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 m 5

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y EP/RSV 350-1300 A 2 B 713 DL

supersedes -  
company Daimler-Benz  
engine OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,15-2,25

Port closing at prestroke

(2,10-2,30)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9,0	4,3-4,8	0,3			
	6,0 15,0 9,0	1,8-2,6 10,2-11,6 2,3-3,3				
200						

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control lever deflection in degrees	Control rod travel mm	Control rod travel mm	Control rod travel mm
1	2	3	7	8	9	10
ca. 52	1300	16,0	without auxiliary spring	ca. 20	350	7,5
	1360	11,8			100	19,0-21,0
(2a)	1420	6,8			350	7,3-7,7
	1400	7,2-8,6	with auxiliary spring		500	4,4-6,8
(2a)	1450	4,8-6,4			650	1,4-3,6
	1500	2,6-4,8			780	0 - 1,0
	1620	0 - 1,0				

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limit Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
1280	63,0-65,0 (62,0-66,0)	1310-1320*	800	55,0-58,0 (53,5-59,5)		100	142,0-148,0	350	7,5
			500	52,0-55,0 (50,5-56,5)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.86

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# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 m 4

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y BR-EP/RSV 350-1400 A 2 B 713 DL supersedes

company  
engine

Daimler-Benz  
OM 352  
123 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,15-2,25

Port closing at prestroke

(2,10-2,30)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9,0	4,3-4,8	0,3			
	6,0 15,0 9,0	1,8-2,6 10,2-11,6 2,3-3,3				
200						

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control-lever deflection in degrees	Control rod travel mm	Control rod travel mm	Control rod travel mm
1	2	3	7	8	9	10
ca. 61	1400	16,0	without auxiliary spring	ca. 24	350	6,5
	1450	12,7			100	19,0-21,0
(2a)	1530	6,0			350	6,2-7,3
	1480	8,4-10,8	with auxiliary spring		450	4,2-6,5
	1530	4,4-7,8			600	1,6-4,2
	1600	1,8-5,2			780	0 - 1,0
	1730	0 - 1,0				

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limitat Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop
rev/min	cm³/1000 strokes	3	4	4	5	rev/min	7	8	Control rod travel mm
1380	60,0-62,0 (59,0-63,0)	1410-1440*	800	54,0-57,0 (52,5-58,5)		100	142,0-148,0	350	6,5
1000	53,5-56,5 (52,0-58,0)		500	50,5-53,5 (49,0-55,0)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.86

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# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 m 7

1. Edition

PES 6 A 80 D 410 RS 2085 Y

RSV 350-1100 A 2 B 2116 L

En

supersedes -  
company OM 352 A  
engine 122 PS/2200 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,15-2,25

Port closing at prestroke

(2,10-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,5+0,1	6,5-6,6	0,25(0,4)			
350	7,4-7,6	1,9-2,4	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever	Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed			③ Torque control rev/min		
	Control rod travel mm	Control rod travel mm	rev/min		Control rod travel mm	rev/min	Control rod travel mm			
1	2	3	4	5	6	7	8	9	10	11
ca. 45	1100	10,5-10,6	without auxiliary spring	ca. 24	350	7,5	1100	10,5-10,6	800	10,8-11,1
	9,6	1140-1150			100	min. 19,0	500	11,5-11,6		
②a	4,0	1200-1230	with auxiliary spring		350	7,4-7,6	650-710 = 2,0			
	1145	9,6								
	1250	3,0-5,0								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)	⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop Control rod travel mm
	rev/min	cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	6	7	8	9
1000	65,0-66,0 (63,5-67,5)	1140-1150 (1135-1155)	800	66,0-68,0 (65,5-68,5)	100	72,0-82,0	350	7,5
			500	66,5-68,5 (66,0-69,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.86

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 m 6

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y RSV350-1200 A 2 B 2117 L

Komb.-Nr. 9 400 093 224

supersedes -

company Daimler-Benz

engine OM 352

98 PS/2400 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25  
(2,10-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	8,1-8,2	4,3-4,4	0,25 (0,4)			
350	7,5-7,6	1,4-2,0	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever	Intermediate rated speed		④ Control-lever deflection in degrees	Lower rated speed		③ Torque control rev/min	Control rod travel mm	
	Control rod travel mm	Control rod travel mm rev/min		rev/min	Control rod travel mm			
ca. 48	1200 7,2 4,0	8,1-8,2 1240-1250 1275-1305	without auxiliary spring	ca.24	350 100 350 640-700 = 2,0	7,5 min. 19,0 7,4-7,6 = 2,0	1200 700 500	8,1-8,2 9,0-9,3 9,5-9,6
	1245 1350 1450	7,2 2,0-4,0 0,3-1,7						
②a			with auxiliary spring					

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)	⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop Control rod travel mm
	rev/min	cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	
200	42,5-43,5 (41,0-45,0)		1240-1250 (1235-1255)	700 500	43,5-45,5 (43,0-46,0) 44,0-46,0 (43,5-46,5)	100	72,0-82,0	350 7,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.86

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,8 i 2

1. Edition

PES 4 A 80 D 410 RS 2094 Z

EP/RSV 350-1300 A2B 713 DL

En

supersedes  
company Daimler-Benz  
engine OM 314  
76 PS/2600 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25  
(2,10-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,0	4,3-4,8	0,3			
200	6,0 15,0 9,0	1,8-2,6 10,2-11,6 2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

① Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm		
ca. 52	1300 1360 1420	16,0 11,8 6,8	without auxiliary spring	with auxiliary spring	ca. 20	350	7,5	1280 800 500	0 0-0,2 0-0,2	
2a	1400 1450 1500 1620	7,2-8,6 4,8-6,4 2,6-4,8 0-1,0				100 350 500 650 780	19,0-21,0 7,3-7,7 4,4-6,8 1,4-3,6 0-1,0			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	⑥ Rotational-speed limitat Note changed to ) rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle	⑤ Idle stop	④a Control rod travel mm 9
				4	5 cm³/1000 strokes			
280	58,5-60,5 (57,5-61,5)	1310-1320*	800 500	51,0-54,0 (49,5-55,5) 46,5-49,5 (45,0-51,0)	100	142,0-148,0	350	7,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

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6.86

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 8,7 b

1. Edition

En

PE 6 A 85 D 420 LS 2262 Z  
Komb.-Nr. 9 400 081 280

EP/RSV 300-1000 A1B 295 DR

supersedes  
company KHD  
engine BA6L 1114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6  
(1,45-1,65) mm (from BDP) RW = 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1000	9,0-9,1	5,1-5,4	0,2 (0,35)			
200	9,0-9,1	3,6-4,2	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in □

## B. Governor Settings

Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 56	1000	16,0	without auxiliary spring	with auxiliary spring	ca. 25	300	5,5-6,0	800	0,2-0,4	
	1040	12,1-12,3				100	19,0-21,0	600	0,6-0,8	
(2a)	1080	7,2				300	5,8-6,2	300	0,7-0,9	
	1070	9,0-11,0				400	2,8-3,6			
	1100	3,7-6,4				500	1,0-3,0			
	1140	1,8-3,2				600	0-1,0			
	1220	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limit Note changed to ) rev/min	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5) Idle stop Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	
980	87,5-88,5 (85,5-90,5)	1010-1020*	700	87,5-89,5 (86,0-91,0)	100	min. 120	-
800	86,5-88,5 (85,5-89,5)		500	90,5-93,5 (89,5-94,5)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 6.3 a

1. Edition

PE 4 A 85 D 420 LS 2262 Z  
Komb.-Nr. 9 400 091 201

EP/RSV 300-1C00 A1B 1035 DR

En

supersedes  
company KHD  
engine F4L 2114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1,5-1,6

Port closing at prestroke

(1,45-1,65)

mm (from BDC)

Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9,0-9,1	5,1-5,4	0,3 (0,5)			
200	9,0-9,1	3,6-4,2	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in □

## B. Governor Settings

Degree of deflection of control lever 1	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 56	1000	16,0	without auxiliary spring	ca. 25	300	300	5,5-6,0	800	0,4-0,6	
	1040	12,1-12,3			100	19,0-21,0	500	500	0,7-0,9	
(2a)	1080	7,2			300	300	5,8-6,2	300	0,7-1,0	
	1070	9,0-11,0	with auxiliary spring		400	400	2,8-3,6			
	1100	3,7-6,4			500	500	1,0-3,0			
	1140	1,8-3,2			600	600	0-1,0			
	1220	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop
rev/min	cm³/1000 strokes	3	rev/min	cm³/1000 strokes	6	cm³/1000 strokes	8	Control rod travel mm
980	84,0-85,0 (82,0-87,0)	1010-1030*	700	86,0-88,0 (83,5-90,5)	100	min. 120	-	-
800	84,0-85,0 (81,0-88,0)		500	max. 91,5 (max. 90,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 CAS 8,3f

1. Edition

En

PES 6 A 85 C 420 LS 2264 EP/RSV 375-1000 A2 B596DR

Supersedes -  
company Case  
engine A 401 BD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25  
(2,10-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,1-4,5	0,4			
	6	1,1-1,9				
	12	7,2-8,0				
200	6	0,8-1,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control rev/min	Control rod travel mm
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	9		
1	2	3				8		10	11	
ca.45	1020	10,8	without auxiliary spring	ca.26	375	6,5	1000	0		
	1080	6,4			150	19-21				
	1130	2,6			375	6,2-6,8			800	0,8-1,0
(2a)	1040	10,4-11,0	with auxiliary spring		450	3,5-5,0	450	1,5-1,8		
	1100	5,6- 6,0			620	0-1				
	1220	0,3- 1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)	6 Rotational-speed limitat		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop Control rod travel mm	4a Control rod travel mm
	rev/min	cm³/1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	
1	2	3	4	5	6	7	8	9
1000	65,0-67,0 (64,0-68,0)	1040-1055 *	650	79,5-83,5 (78,5-84,5)	100	26,0-132,0	375	12,5-16,5
			550	max. 82,5 (max. 83,5)				
			1100	8,5-16,5 (7,5-17,5)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 q 16

1. Edition

En

PES 6 A 90 D 410 RS 2293      RSV 350-1250 AOB 2208 L  
 Komb.-Nr. 9 400 085 252

supersedes  
company Daimler-Benz  
OM 352  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      2,15-2,25  
 (2,10-2,30)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	10,0+0,1	6,2-6,3	0,3(0,45)			
350	7,1-7,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed 4	5	6	④ Control-lever deflection in degrees 7	Lower rated speed rev/min	Control rod travel mm	③ Torque control rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,8	-	-	-	ca. 20	350	6,7	1250	10,0-10,1
		x = 2,5					100	min. 19,0	500	10,0-10,2
ca. 49	9,0	1290-1300					350	7,1-7,3	400	11,6-11,8
②a	4,0	1340-1370					430-500	= 2,0		
	1450	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min	⑥ Rotational-speed limit Note changed to rev/min 3	③a Fuel delivery characteristics rev/min	Starting fuel delivery Idle rev/min	⑤ Idle stop Control rod travel mm 8				
1	2	3	4	5	6	7	8	9
1250	61,5-62,5 (59,5-64,5)	1290-1300*	-	-	200	14,2-14,8 mm RW	350	7,2

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 5,1 f

1. Edition

PES 5 A 80 D 410/3 RS 2347  
Komb.-Nr. 9 400 093 406  
1-3-5-4-2 je  $72^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

EP/RS 325/1400 AOB 699 DL

En

Supersedes -  
company KHD  
engine F5L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1,9-2,0  
(1,85-2,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1400	11,2+0,1	6,4-6,5	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

## B. Governor Settings

Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-		325	8,3	1400	11,2-11,3
	X =						300	8,4-9,1	700	11,8-12,1
VHca.60	8,7	1400-1450					400	6,0-6,8	500	11,8-12,1
FHmax.	4,0	1500-1530					550	3,5-4,0		
(2a)	1600	0,3-1,7					1350	2,8-3,2		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop		6	Rotational-speed limit		3a	Fuel delivery characteristics		5	4a	Idle stop	
	Test oil temp 40°C (104°F)	rev/min		Note changed to	rev/min		rev/min	cm³/1000 strokes	Starting fuel delivery Idle		rev/min	Control rod travel mm
		1	2		3		4	5	6	7	8	9
1400	64,5-65,5 (63,0-67,0)		1430-1440*		700	57,0-59,0 (56,5-59,5)			100	100,0-140,0	-	-
					500	54,5-56,5 (53,5-57,5)						

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 9,6 p

En 3. Edition

PES 6 A 95 D 410 RS 2416

RQ 750 AB 1199 L

Komb.-Nr. 0 400 846 534

supersedes 10.85

company

KHD

BF 6 L 413 FRT  
112 kW/1500 min<sup>-1</sup>

Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0  
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
710	11,8+0,1	12,8 - 13,0	0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	Setting point rev/min 11	Control rod travel mm 12	
-	-	-	-	10,6 3,5	750-755 781-791	-	-	-	-	-	

Torque-control travel  
on flyweight assembly dimension a =

- mm

Speed regulation: At

750-755 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7		
710	127,5 - 129,5 (125,5 - 131,5)	-	-	-	100	115,0 - 125,0 (112,0 - 128,0) = 13,2 - 13,4 mm RW		

Checking values in brackets

7.86

# (2) Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 MAN 11,1 c 1

1. Edition

En

PES 6 A 95 D 410 LS 2420

RQ 250/1050 AB 894 DL

Komb.-Nr. 0 400 846 370

supersedes -

company: MAN

engine.

D 2556 MXUM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,3-1,4) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,3+0,1	10,2-10,4	0,35(0,6)			
250	5,9-6,1	1,1-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control Control rod travel rev/min 11	
		Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6		Control rod travel mm 8	Test specifications Control rod travel mm 9	rev/min 10		Control rod travel mm 12	
600	15,6-16,4	600	16,0	9,3 4,0	1090-1105 1135-1165	250	6,0	100 250 360-400 = 2,0	min. 7,5 5,9-6,1	1050 500 700	10,3-10,4 10,9-11,0 10,7-11,0

Torque-control travel  
on flyweight assembly dimension a =

0,30 mm

1090-1105 min⁻¹

1 mm less control  
rod travel

Speed regulation: At

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4			Starting fuel delivery Idle speed Control rod travel rev/min 6	
				cm³/-1000 strokes 2		cm³/-1000 strokes 5	cm³/1000 strokes/mm 7	
1050	101,5-103,5 (99,5-105,5)	-			500	max. 103,5 (max. 106,0)	100	116,5-126,5 (113,5-129,5)
					700	100,0-103,0 (97,5-105,5)		= 13,5-14,1 mm RW

Checking values in brackets

4.86

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② **Test Specifications**  
**Fuel Injection Pumps**  
**and Governors**

**40**

WPP 001/4 MAN 11,1 c

3. Edition

En

PES 6 A 95 D 410 LS 2420 Z, Y	RQ 250/1150 AB839DL (1-3)	supersedes 8.77 company M A N engine D 2556.. MXUH/MXUM (1 - 232 PS) MUH/MUM (2 - 200 PS) MXUH/MXUN (3 - 210 PS) MXUM/MXUH (4 - 192 PS) MXUM/MXUH (5 - 175 PS)
LS 2420	RQ 250/1150 AB869DL (4)	
LS 2420 Z	RQ 250/1050 AB894DL (5)	

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

1,3 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,4 - 8,0	0,4			
	6	3,2 - 4,2				
	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

RQ .. 839 DL (1)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control		
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Control rod travel mm	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12	
600	15,7-16,3	600	16,0	1170	15,0-15,4	540	0	150	6,6-8,1	880	15,8-16,0	
				1200	10,0-14,4			250	4,5-6,7	1020	15,4-15,6	
				1250	0 - 9			350	1,5-4,0		1100	15,3-15,4
				1320				440	0			

Torque-control travel  
on flyweight assembly dimension a = 0,2 mm Speed regulation At 1190 - 1205 = 1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes		
1	2	3	4	5	6	7		
2420	with 839 DL -20°							
1150	120,5 - 122,5	Sp. 6-7	800 500	118,5 - 121,5 max. 121,5	100	11,9 - 12,9 (14±0,3 mm RW)		
40°				116,0 - 119,0 max. 118,5				
1150	117,5 - 119,5							

Checking values in brackets

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D2

**B. Governor Settings**

RQ .. 839DL (2)

Checking of slider PRG check Control rod travel		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	mm	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,0-15,4 10,0-14,4 0 - 9	540	0	150 250 350 440	6,6-8,1 4,5-6,7 1,5-4,0 0	880 1020 1100	15,8-16,0 15,4-15,6 15,3-15,4

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation At 1190 - 1205 = 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Testoil-ISO 4113

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics				Starting fuel delivery idle speed		(6)	
rev/min	cm³/-1000 strokes	rev/min	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes/mm	rev/min	cm³/1000 strokes	Control rod travel	
2420Z	with 839 DL - 20°										
1150	106,0 - 108,0		Sp. 6-7	800 500	108,0 - 111,0 max. 106,5			100	11,9 - 12,9 (14+0,3 mm RW)		
40°								250	7 mm RW		
1150	103,0 - 105,0			800 500	105,5 - 108,5 max. 103,5						

Checking values in brackets

**B. Governor Settings**

RQ .. 839 DL (3)

Checking of slider PRG check Control rod travel		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	mm	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,0-15,4 10,0-14,4 0 - 9	540	0	150 250 350 440	6,6-8,1 4,5-6,7 1,5-4,0 0	880 1020 1100	15,8-16,0 15,4-15,6 15,3-15,4

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation At 1190 - 1205 = 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics				Starting fuel delivery idle speed		(6)	
rev/min	cm³/-1000 strokes	rev/min	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes/mm	rev/min	cm³/1000 strokes	Control rod travel	
2420Y	with 839 DL - 20°										
1150	109,5 - 111,5		Sp. 6-7	800 500	109,0 - 112,0 max. 112,0			100	11,9 - 12,9 (14+0,3 mm RW)		
40°								250	7 mm RW		
1150	106,5 - 108,5			800 500	106,5 - 109,5 max. 109,0						

En Checking values in brackets

**B. Governor Settings**

RQ.. 869DL (4)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1170	15,6-16,0	550	0	150	6,5-8,1	-	-
				1200	11,0-15,0			120	4,7-6,9		
				1250	0 - 9,6			350	1,7-4,2		
				1320	0			450	0		

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation At 1190 - 1205 = 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / mm
1	2	3	4	5		6	
2420	with 869 DL - 20°						
1150	124,5 - 126,5		Sp. 6-7	500	max. 121,5	100	11,9 - 12,9 (14+0,3 mmRW)
40°						250	7 mm RW
1150	121,5 - 123,5			500	max. 118,5		

Checking values in brackets

**B. Governor Settings**

RQ.. 894DL (5)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-18,3	600	16,0	1070	14,8-15,2	540	0	100	7,1-8,1	750	15,8-16,0
				1100	8,4-13,5			250	4,7-6,9		
				1140	0 - 8,8			350	1,6-3,9	1050	15,0-15,2
				1200	0			440	0		

Torque control travel on flyweight assembly dimension a = 0,3 mm Speed regulation At 1090 - 1105 = 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / mm
1	2	3	4	5		6	
2420Z	with 894 DL-20°						
1050	91,5 - 93,5		Sp. 6-7	800	93,0 - 96,0	100	11,9 - 12,9
40°				500	max. 92,5	250	7 mm RW
1050	88,5 - 90,5				800	90,5 - 93,5	
				500	max. 89,5		

En Checking values in brackets

Testoil-ISO 4113

# ① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 g 40

2. Edition

En

PE 12 A 95 D 610 LS 2449  
Komb.Nr. 0 400 640 111

RQV 300-1200 AB 1105-1 L

supersedes 2.85

company: KHD

engine: BF 12 L 413 F  
326 kW / 2400 min<sup>-1</sup>

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12  
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,8-1,9  
(1,75-1,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1200	11,0+0,1	10,9 - 11,1	0,35(0,6)			
300	6,4-6,6	1,1-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6	④	7	8	9	③	10	11
max.	1250	15,2-17,8		-	--	-		ca. 14	100	min. 8,0		250	0,6-0,9
ca. 67	10,0	1240-1250							300	6,4-6,6		650	4,2-4,4
	4,5	1300-1330										1000	6,3-6,5
	1450	0 - 1,0							315-410			1275	9,0

Torque control travel a = 0,35 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	④	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	control rod travel mm
1	2	3	④	4	5	6	7	8	9
LDA 1200	0,7 bar 109,0-111,0 (107,0-113,0)	1240-1250 *		LDA 800	0,7 bar 109,5-112,5 (107,0-115,0)	100	126,5-136,5 (123,5-139,5)	1200 500 915 1045	11,0+0, 11,3+0, 11,2+0, 11,0+0,
				LDA 500	0 bar 84,5-87,5 (82,5-89,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.86

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D5

## D. Adjustment Test for Manifold Pressure Compensator

KHD 19,0 g 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel mm	diminution difference (1)
		Gauge pressure = bar	Gauge pressure = bar		
PE 12A..LS 2449 + RQV.. AB 1105-11	0,70		0	11,2-11,3	
			0,32	10,4-10,5	
			0,22	10,9-11,0	
				10,5-10,7	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 19,0 n 1

3. Edition

En

PE 12 A 95 D 610 LS 2453 RQV 1150 AB 996 L  
Komb.-Nr. 0 400 640 096

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12  
0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

supersedes 4.85

company KHD

engine F 12 L 413 F  
247 kW/2300 min<sup>-1</sup>  
Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,0-2,1

(1.95-2.15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1110	10,2+0,1	8,9-9,1	0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
ca. 26	9,2 4,0	1150-1155 1175-1190	②	-	-	-	⑤	-	-	-	⑥	1050 1100 1150 1200 1220	0,5-0,9 2,7-3,1 5,5-5,8 9,0-9,1 10,5

Torque control travel a =-- mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	②	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1110	88,5-90,5 (86,5-92,5)	1150-1155*	-	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.86

# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4 CAS 8,3e

1. Edition

En

PES 6 A 85 D 420 LS 2460 EP/RSV 375-1000 A2.B596DR

supersedes -  
company Case  
engine A 401 BD

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,15-2,25

Port closing at prestroke (2,10-2,30)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	5
1000	9	4,1-4,5	0,4			
	6	1,1-1,9				
	12	7,2-8,0				
200	6	0,8-1,6				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed			4	Lower rated speed rev/min	Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	Control rod travel mm	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
ca.45	1020	10,8	without auxiliary spring	ca.26	375	6,5	1000	0	
	1080	6,4			150	19-21			
	1130	2,6			375	6,2-6,8			
2a	1040	10,4-11,0	with auxiliary spring		450	3,5-5,0	800	0,8-1,0	
	1100	5,6- 6,0			620	0-1			
	1220	0,3- 1,0							

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limitat Note changed to rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
1	rev/min cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
1000	65,0-67,0 (64,0-68,0)	1040-1055 *	650 550 1100	79,5-83,5 (78,5-84,5) max. 82,5 (max. 83,5) 8,5-16,5 (7,5-17,5)	100 26,0-132, 0 375 cm³/1000 H.				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.86

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# (2) Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 DAF 8,3 k 2

3. Edition

En

PE 6 A 95 D 410 RS 2525 RQ 225/1200 AB 1156 L  
 Values apply to fuel-injection test tubing  
 1 680 750 015  
 Komb.-Nr. 0 400 646 268

supersedes 1.85  
 company: DAF  
 engine: DH 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings**

Port closing at prestroke		2,0-2,1 (1,95-2,15)		mm (from BDC)			
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes		Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1200	10,4+0,1	7,3-7,5		0,35(0,6)			
	225	5,9-6,1	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings**

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
650 VH=	19,2-20,8 max. 46°	650	20,0	9,4 4,0 1400	1245-1260 1300-1330 0-1,0	225	6,0	100 225 345-385=2,0 490	min. 7,5 5,9-6,1 =2,0 max. 1,0	1200 650 1035 1100	10,4-10,5 11,3-11,4 10,9-11,1 10,5-10,8

Torque-control travel  
on flyweight assembly dimension a =

0,35 mm

Speed regulation: At

1245-1260 min⁻¹

1 mm less control  
rod travel**C. Settings for Fuel injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery idle speed		Control rod travel	
rev/min	cm³/-1000 strokes	rev/min	3	rev/min	cm³/-1000 strokes	6	cm³/1000 strokes/mm	7	6	7
1200	73,0-75,0 (71,0-77,0)	-	800	74,5-77,5 (72,0-80,0)		100	130,0-140,0 (127,0-143,0) = 19,5-21,0 mm RW			

Checking values in brackets

4.86

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 INA 3,3 a

1. Edition

En

PE 4 A 85 D 320 RS 2539  
Komb.-Nr. 9 400 091 203

EP/RSV 250-1600 A2B 1109 DR

supersedes=  
company INARMO  
engine Cimarrón

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

<sup>1,5-1,6</sup>  
Port closing at prestroke (1,45-1,65) mm (from BDC) RW = 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1500	8,6-8,7	6,2-6,3	0,3(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 70	1600	16,0	without auxiliary spring	ca. 24	250	5,5	1100	0,7-0,9	1000	1,1-1,3
	1680	10,9			250	5,7-6,3	800	1,1-1,3		
	1750	5,8			400	1,3-3,6	500	1,2-1,4		
	1700	7,8-10,5			550	0-1,0				
(2a)	1800	1,7-4,0								
	1950	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat. Note: changed to .. rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
1500	61,5-62,5 (60,5-63,5)	1610-1620*	900	56,5-58,5 (55,0-60,0)	100	min. 120	-	-
1100	58,5-60,5 (57,0-61,0)		700	56,5-58,5 (55,0-60,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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7.86

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 6,2 i

9. Edition

En

Testoil-ISO 4113

PE 6 A 90 D 320 RS 2547 RQ 250/1200 AB 1022 R

Komb.-Nr. 0 400 646 256

Values apply to fuel-injection test tubing  
1 680 750 015

supersedes 1.84

company DAF

engine DT 615

113 kW (153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,20-2,30

Port closing at prestroke

(2,15-2,35)

mm (from BDC)

RW = 8,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,1 - 7,3	0,3(0,45)			
250	6,9-7,1	1,1 - 1,5	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. 2,5 - 3,5 ° camshaft

Adjust the fuel delivery from each outlet according to the values in [ ].

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Control rod travel	Control rod travel	Control rod travel	Control rod travel	Control rod travel	Control rod travel
Control rod travel rev/min 1	Control rod travel mm 2	Control rod travel rev/min 3	Control rod travel mm 4	Control rod travel rev/min 5	Control rod travel rev/min 6	Control rod travel rev/min 7	Control rod travel mm 8	Control rod travel rev/min 9	Control rod travel mm 10	Control rod travel rev/min 11	Control rod travel mm 12
650	19,6-20,4	650	20,0	9,8 4,0 1500	1245-1265 1340-1370 0 - 1,0	250		100 250 380-420 = 2,0	min. 8,5 6,9-7,1 510 max. 1,0	-	-
VH	= max. 46°			.							

Torque-control travel  
on flyweight assembly dimension a = - mm

1245-1265 min⁻¹

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes/mm 7	Control rod travel
LDA 1000	0,7 bar 71,5 - 72,5 (69,5 - 74,5)		LDA 600	0 bar 51,5 - 53,5 (49,0 - 56,0)	100	135,0-145,0 (132,0-148,0) = 19,5-21,0 mm RW	

Checking values in brackets

4.86

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## D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure  
increasing

DAF 6,2 i

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
..RS 2547 + RQ..AB 1022 R	0,70	0,20 0,12 0	10,8 - 10,9 10,6 - 10,7 9,9 - 10,1 9,8 - 10,0

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MB 3,8 n 12

2. Edition

En

PES 4 A 90 D 410 RS 2570      RQV 300-1400 AB 1146-3 L  
Komb.-Nr. 9 400 085 230

supersedes 10.85  
company: Daimler-Benz  
engine: OM 314 A  
81,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,0-2,1</sup> (1,95-2,15) mm (from BDC), RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1400	12,8+0,1	8,0-8,1	0,3(0,5)			
	300	8,9-9,1	1,3-1,7	0,25(0,45)		

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	2a	4	5	6	7	8	10	11
max.	1400	15,2-17,8	-	-	-	ca. 16	100	min. 10,5	300	0,7-1,2
ca. 64	11,8 4,0 1800	1440-1450 1585-1615 0-1,0	4,0 1800	400-470	300 740-800= 2,0	775 950 1460	18,9-9,1	2,0	550 775 950	2,7-3,0 4,1-4,6 5,2-5,5 8,5

Torque control travel a = 1,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	4a	rev/min	5b	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10
LDA 1400	0,5 bar 80,0-81,0 (78,0-83,0)	1440-1450*	LDA 500	0,5 bar 74,0-76,0 (72,0-78,0)	100	73,0-83,0 (70,0-86,0)	1400 500 1050 1225	12,8+0, 13,8+0, 13,5+0, 12,9+0, 13	1
			LDA 500	0 bar 56,5-58,5 (54,5-60,5)					2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.86

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## D. Adjustment Test for Manifold Pressure Compensator

MB 3,8 n 12

-2-

Test at  $n = 500$  rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PES 4 A..RS 2570 + AB 1146-3 L	0,5	0 0,33 0,23	13,8-13,9 12,1-12,2 13,4-13,5 12,4-12,7	

Notes:

(1) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

40

WPP 001/4 IHC 9,0 a

2. Edition

En

PES 8 A 95 D 320 RS 2586  
Komb.-Nr. 0 400 848 024  
Suction-gallery pressure 2,5 bar  
Use overflow valve 1 417 413 019

RQV 325-1400 AB1097 R

supersedes 1 . 83

company IHC

engine D9L

180 PS (133 kW)

TECHNICAL TEST

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,55-2,65 (2,50-2,70) mm (from BDC) = RW 17,2 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1400	11,6+0,1	7,2 - 7,4	0,3 (0,6)			
325	7,2-7,4	1,0 - 1,4	0,3 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Sliding sleeve travel rev/min	mm
1	2	3	18	4	5	4	6	3	10	11
max.	1430	15,2-17,8	-	-	-	ca. 10	100	min. 8,0	-	-
ca. 67	10,6 4,0 1650	1440-1450 1535-1565 0 - 1,0				3a	325 610-670 = 2,0	7,2 - 7,4		

Torque control travel a = mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min
1	2	3	4	6	8
1400	72,0-74,0 (70,0-76,0)	1440-1450*	-	100 325 10,0-14,0 (7,5-16,5)	- - -

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.00

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# Test Specifications Fuel Injection Pumps ① and Governors

PES 6 A 90 D 410 RS 2596      RQV 300-1400 AB 1146-2 L  
Komb.-Nr. 9 400 085 229

supersedes 9.85  
company Daimler-Benz  
engine OM 352 A  
127 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,0-2,1)  
(1,95-2,15) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1400	12,8+0,1	8,1-8,2	0,3(0,5)			
300	8,9-9,1	1,3-1,7	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
	Control rod travel mm	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
max.	1400	15,2-17,8	-	-	-	ca. 16	100 300	min. 10,5 8,9-9,1
ca. 64	11,8 4,0 1800	1440-1450 1585-1615 0-1,0	-	-	-	ca. 16	100 300 740-800=2,0	300 0,7-1,2 550 2,7-3,0 775 4,1-4,6 950 5,2-5,5 1450 8,5

Torque control travel a = 1,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	rev/min	
LDA 1400	0,5 bar 81,0-82,0 (79,0-84,0)	1440-1450*	LDA 500	0,5 bar 76,5-78,5 (73,5-79,5)	100	73,0-83,0 (70,0-86,0) =14,8-15,2 mm RW	
			LDA 500	0 bar 62,0-64,0 (60,0-66,0)		1400 500 1050 1225	12,8+0,1 13,8+0,1 13,5+0,2 12,9+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.00

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure MB 5,7 v 15

-2-

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel mm	diminution difference (1)
PES 6 A..RS 2596 +RQV..AB 1146-2 L	0,50		0 0,33 0,23			13,8-13,9 12,5-12,6 13,5-13,6 12,5-12,8

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 p1

2. Edition

En

PE8A95D 410 LS 2608 RQ 300/1250 AB 929 L

supersedes 9.84

Komb.- Nr. 0 400 648 140

company: KHD

1-8-7-2-6-5-4-3 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )engine: F8L413 F  
157 kW/2500min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,0-2,1</sup>  
(1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1250	9,3-9,4	8,6-8,8	0,35(0,6)	2	3	6
	6,4-6,6	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point rev/min	Control rod travel mm	Control rod travel rev/min	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	Control rod travel rev/min	Test specifications Control rod travel mm	Setting point rev/min	Control rod travel mm	
600	15,6-16,4	600	16,0	8,3 4,0	1295-1310 1345-1375	300	6,5	100 300 410-450 =2,0	min. 8,0 6,4-6,6 =2,0	1250 650 945 1020	9,3-9,4 9,7-9,8 9,5-9,7 9,3-9,6
Torque-control travel on flyweight assembly dimension a =	0,40	mm	0,40	mm	1295-1310 min	1295-1310 min	1295-1310 min	1295-1310 min	1295-1310 min	1 mm less control rod travel	

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm
1250	85,5-87,5 (83,5-89,5)	-	750	78,5-81,5 (76,0-84,0)	-	-

Checking values in brackets

7.86

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MB 5,6 a 1

1. Edition

En

PES 6 A 90 D 410 RS 2673      RQV 300-1425 AB 740-3 L  
Komb.-Nr. 9 400 085 220

supersedes  
company Daimler-Benz  
engine OM 352  
96 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,15-2,25

(2,10-2,30)

mm (from BDC)

RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,7+0,1	10,4-10,5	0,3(0,5)			
300	6,6-6,8	1,2-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	3	1
1	2	3	2a	4	5	6	4	7	8	9	10	11
max.	1420	15,2-17,8		-	--	-		ca. 12	100	min. 7,9	-	-
ca. 62	12,7	1445-1455							300	6,6-6,8		
	4,0	1600-1630							660-720	= 2,0		
	1750	0-1,0							900	max. 1,0		
							3a					

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idling speed		Starting fuel delivery idle switching point		Torque-control travel	
1 rev/min	2 cm³/1000 strokes	3 rev/min	4 rev/min	5 cm³/1000 strokes	5b	6 rev/min	7 cm³/1000 strokes	8 rev/min	9 Control rod travel mm
1400	103,5-104,5 (101,0-107,0)	1445-1455*	-	-		100	min. 19,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MB 5,6 a

1. Edition

En

PES 6 A 90 D 410 RS 2673      RQV 300-1425 AB 740-4 L  
Komb.-Nr. 9 400 085 235

supersedes  
company: Daimler-Benz  
OM 352-0  
engine: 88 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      2,15-2,25  
(2,10-2,30)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	13,2+0,1	9,8-9,9	0,3(0,5)			
300	6,6-6,8	1,2-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	3	1
1	2	3	2a	4	5	6	4	7	8	9	10	11
max.	1420	15,2-17,8		-	--	-		ca. 12	100	min. 7,9	-	-
ca. 62	12,2 4,0 1750	1445-1455 1595-1625 0-1,0						370-520	300 660-720= 2,0 900	6,6-6,8 2,0 max. 1,0		
								3a				

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	4a	5a	6	5
1400	97,5-98,5 (95,5-100,5)	1445-1455*	-	-	100	min. 19,0 mm RW

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 FOR 4,4 a 1

1. Edition

PES 4 A 95 D 410 RS 2699      RS 350/1400 A2B 2149-2 L  
Komb.-Nr. 9 400 085 287  
Values apply to fuel injection test tubing  
1 680 750 008

supersedes  
company Ford  
engine FT0 4,4 L

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Testoil ISO 4113

Port closing at prestroke      3,25-3,25  
(3,10-3,30)      mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1400	11,1+0,1	8,1-8,3	0,35 (0,6)			
350	6,4-6,6	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	FH ca.27	350	6,5	1400	11,1-11,2
	x = 5,5						300	7,2-7,8	500	12,4-12,5
FH max.	8,2	1440-1450					450	3,7-4,5	1000	12,0-12,2
VHca.65	4,0	1525-1565					600	max.3,7	1200	11,4-11,7
(2a)	1650	0,3-1,7					1350	max.2,5		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note changed to ) rev/min	(3a) Fuel delivery characteristics		Starting fuel delivery Idle	(5)	(4a) Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min
1400	80,5-82,5 (78,5-84,5)	1440-1450*	500	83,0-86,0 (80,5-88,5)	100	108,0-118,0 = 19,0- 21,0 mm RW	-
			1000	88,0-91,0 (85,5-93,5)			-

Checking values in brackets

\* 1 mm less control rod travel than col 2

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6.85

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 6,2 p 1

2. Edition

En

PES 6 A 95 D 320 RS 2693 Z  
Komb.-Nr. 0 400 846 537

RQ 300/1300 AB 1204 R

supersedes 10.85  
DAF  
company.  
DNS 620  
engine. 150 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC), RW = 7,5-10,5 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	12,2+0,1	8,7-8,9	0,35(0,6)			
300	6,4-6,6	0,7-1,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min	Full-load speed regulation						Idle speed regulation						Torque control	
	1	Setting point rev/min	Control rod travel mm	Control rod travel mm	Test specifications rev/min	4	Setting point rev/min	Control rod travel mm	Control rod travel mm	Test specifications rev/min	5	3	Control rod travel mm	
2	3	4	5	6	7	8	9	10	11	12	13	14	Control rod travel mm	
820	19,2-20,8	820	20,0	10,6	1343-1358	300	6,2	100	min. 7,3	1290	11,6-11,7	850	13,2-13,3	
VH = max. 46°				4,0	1425-1450			300	6,1-6,3	965	12,7-12,9	520-560=2,0	1060	12,2-12,4

Torque-control travel  
on flyweight assembly dimension a = 0,57 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min	Fuel delivery characteristics		Starting fuel delivery Idle speed	(6)
rev/min	cm³/-1000 strokes	3	rev/min	cm³/-1000 strokes	6	
1	2	4	5	6	7	Control rod travel
LDA 850	0,7 bar 87,0-89,0 (85,0-91,0)	-	LDA 1290	0,7 bar 85,0-87,0 (82,5-89,5)	100	125,0-135,0 (122,0-138,0)
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)	300	7,0-11,0 (4,5-13,5)

Checking values in brackets

4.86

## D. Adjustment Test for Manifold Pressure Compensator

DAF 6,2 p 1

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution (1)
	Gauge pressure = bar	Gauge pressure = bar	mm
PES 6 A..RS 2693 Z + AB 1204 R	0,7	0 0,29 0,25	12,2-12,3 11,2-11,4 12,0-12,1 11,5-11,7

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MWM 5,9 c 1

1. Edition

En

PES 6 A 90 D 320 RS 2701 RSV 350-1150 A 2 B 2097-2 R  
Komb.-Nr. 9 400 085 286

supersedes -  
company MWM  
engine D 229-6  
110 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,65-2,75  
(2,60-2,80) mm (from BDC)

Port closing at prestroke

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1150	9,2-9,3	6,2-6,3	0,3 (0,5)			
350	5,9-6,1	1,1-1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed 4	5	6	④ Control-lever deflection in degrees 7	Lower rated speed rev/min	Control rod travel mm	③ Torque control rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-		350	5,5	1150	9,2-9,3
	x = 4,25						100	min. 19,0	500	9,8-9,9
ca. 46	8,2	1190-1200					350	5,9-6,1	800	9,4-9,7
2a	4,0	1230-1260					570-630	= 2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min	⑥ Rotational-speed limit Note changed to rev/min	③a Fuel delivery characteristics rev/min	Starting fuel delivery Idle rev/min	⑤	④a Idle stop Control rod travel mm			
1	2	3	4	5	6	7	8	9
1150	62,0-63,0 (59,5-65,5)	1190-1200*	500	53,5-55,5 (51,0-58,0)	100	19,0-21,0 mm RW	-	-
			800	59,5-61,5 (57,0-64,0)	350	10,5-14,5 (8,0-17,0)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.86

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# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MWM 5,9 e

1. Edition

En

PES 6 A 90 D 320 RS 2718      RSV 350-1500 AOB 2207-1 R  
Komb.-Nr. 9 400 085 273

supersedes -  
company MWM  
engine TD 229-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,7-2,8</sup> (2,65-2,85) mm (from BDC, RW = 9,0-12,0 mm)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) min
1	2	3	4	2	3	6
1500	10,9+0,1	8,3-8,4	0,3 (0,5)			
350	5,9-6,1	1,0-1,4	0,25(0,45)			

Port closing difference = 4,0-5,0° mm between control-rod travel 9 mm and control-rod travel 12 mm

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 22	350	5,5	1500	10,9-11,0
	X = 3,5						100	min. 19,0	500	10,9-11,1
(2a)	9,9	1540-1550					350	5,9-6,1	400	12,1-12,7
	4,0	1600-1630					430-490=2,0			
	1700	0,3-1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	(6) Rotational-speed limitat Note changed to ) rev/min	(3a) Fuel delivery characteristics		Starting fuel delivery Idle rev/min	cm³/1000 strokes	(5)	(4a) Idle stop Control rod travel mm
				3	4				
1500	83,0-84,0 (81,0-86,0)		1540-1550*	500	70,0-72,0 (67,5-74,5)	100	19,0-21,0 mm RW 9,5-13,5 (7,5-15,5)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 FOR 6,6 h

1. Edition

En

PES 6 A 95 D 410 RS 2722      RQV 350-1300 AB 1200 L  
Komb.-Nr. 9 400 085 265

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 015

supersedes  
company: FTO  
engine 6,6 l TC  
160 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,15,3,25  
(3,10-3,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,3+0,1	7,7-7,9	0,35 (0,6)			
350	4,9-5,1	1,1-1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	① Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	④ Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	③ rev/min 10	mm 11
max.	1340	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	350	1,2-1,5
ca. 62	9,3 4,0 1600	1360-1370 1450-1480 0 - 1,0				370-440	350 490-550= 2,0 1340	4,9-5,1 490-550= 2,0 1340	550 1000	3,0-3,3 5,8-6,2 8,6

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④b		Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel Control rod travel mm ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	rev/min 5	rev/min 6	rev/min 7	cm³/1000 strokes 8	rev/min 9	
LDA 1300	0,7 bar 77,0-79,0 (75,0-81,0)	1360-1370 *	LDA 600	0,7 bar 61,0-64,0 (60,0-65,0)	100	150,0-170,0	-	-	
			LDA 500	0 bar 53,0-55,0 (51,0-57,0)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.86

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

FOR 6,6 h - 2 -

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PES 6 A..RS 2722 +RQV .. AB 1220 L	0,70	0 0,45 0,36	10,3-10,4 9,2-9,3 9,9-10,1 9,5-9,6	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4 DEE 7,6 e 1

2. Edition

En

PES 6 A 100 D 410 RS 3028      RSV 400-1100 A 2 B 2010 DL  
Komb.-Nr. 0 401 276 047

Values apply to fuel-injection test tubing 1 680 750 008

Supersedes 12.63  
company John Deere  
engine 6466 A  
Traktor 4640

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

1,95-2,05

Port closing at prestroke      mm (from BDC)

(1,90-2,10)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1100	11,1+0,1	11,1-11,3	0,3 (0,6)			
400	6,3-6,5	1,2-1,8	0,4 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	10	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 19	400	6,3	750	11,9
	X =						100	19,0-21,0	1100	11,1
ca. 43 (2a)	1150	10,1					500	9,9		
	1200	4,8					530-590	= 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limit Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
LDA 1100	1,2 bar 111,0-113,0 (108,0-116,0)	1145-1155*	LDA 750 LDA 500	1,2 bar 119,5-122,5 (116,5-125,5) 0 bar 77,0-81,0 (74,0-84,0)	100 400 1200	175,0-195,0 12,0-18,0 27,0-33,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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E4

Testoil-ISO 413

## D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 e 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing pressure - in bar gauge pressure

Pump/governor	Setting		Measurement		Control rod travel-	diminution ~ difference
	Gauge pressure =	bar	Gauge pressure =	bar	mm	(1)
PES6A..RS3028 + RSV..A2B2010DL	0,38		0,17		11,65 - 11,75 10,3 - 10,7	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications

## Fuel Injection Pumps (1A)

### and Governors

40

WPP 001/4 DEE 7,6 e 2

1. Edition

PES 6 A 100 D 410 RS 3028  
Komb.-Nr. 9 400 230 042

RSV 425-1100 A2B 2159 L

supersedes

company John Deere

engine 6466 A

4650 Row Cropper

En

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05  
(1,90-2,10) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1100	11,1+0,1	11,3-11,5	0,3 (0,6)			
425	6,9-7,1	2,4-2,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

### B. Governor Settings

Degree of deflection of control lever 1	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 19	425	6,5	1000	11,1-11,2
	x =						100	min. 19,0	750	12,9-13,2
ca. 43	10,1	1145-1155					425	6,9-7,1		
(2a)	4,0	1190-1220					460-520	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)	6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
	rev/min	cm³/1000 strokes	Note changed to ) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min
LDA 1100	0,8 bar 112,5-114,5 (111,0-116,0)	1145-1155*	LDA 750	0,8 bar 131,0-136,0 (129,0-138,0) 0 bar 86,0-90,0 (84,0-92,0)	100	165,0-185,0				
			LDA 500		400	24,0-28,0				
					190	35,0-45,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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## D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 e 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure =	Measurement Gauge pressure =	Control rod travel mm (1)	diminution difference
PES 6 A..RS 3028 + RSV..A2B 2159 L	0,10	0,30	11,1-11,2 13,0-13,4	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E7

En

# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DEE 7,6 f

2. Edition

En

PES 6 A 100 D 410 RS 3038 RSV 400-1100 A 2 B 2120 L

Komb.-Nr. 9 400 230 032

supersedes 2.84  
company John Deere  
engine 6 466 AT-05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

1,95-2,05

Port closing at prestroke

(1,90-2,10)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,8+0,1	10,8-11,0	0,3			
400	6,6-6,8	1,3-1,7	0,3			

Port closing mark cyl. 1 : 15° after port closing

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control Control rod travel 10
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	
loose	800	0,3-1,0	-	-	-	ca. 17	400	6,1	1100
ca. 40	9,8	1145-1155					100	min. 19,0	650
2a	4,0	1205-1235					400	6,6	11,8-12,1
	1300	0,3-1,7					480-540	= 2,0	
							850	max. 1,0	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min	cm³/1000 strokes	6 Rotational-speed limitat Note Changed to rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle rev/min	5 Idle stop Control rod travel mm	4a Control rod travel mm	
			4	5 cm³/1000 strokes				
1100	108,0-110,0 (105,0-113,0)	1145-1155*	650	115,5-118,5 (112,5-121,5)	100	170,0-195,0 = 21,0 mm RW High idle speed: 1200 27,0-37,0 Low idle speed 400 13,0-17,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,5 c

En

1. Edition

Testoil-ISO 4113

PES 5 M 55 C 320 RS 158  
 RSF 340/2300 M 64-1  
 0 400 075 980  
 1- 2- 4 - 5 - 3  
 0-72-144-216-288

Supersedes -  
 company Daimler-Benz  
 engine OM 602 A  
 92 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30  
(2,15-2,35)

mm (from BDC)

RW = 20,0-22,0 mm

Control rod travel

Note: Before starting  
testing, observe the  
important instruc-  
tions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1-5,2	0,25 (0,3)			
315	5,3-5,5	0,5-0,6	0,1 (0,15)			
1600			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in  

Checking values in brackets

## B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Rotational speed rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9
8-12	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span> min. 8,0 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span> 5,3-5,5 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span> 4,2-4,4 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span> - <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> 2,5	220 315 380** - 540-640	50	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">7</span> 13,9+0,1 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">8</span> 8,1-8,5 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">9</span> - <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">10</span> 0-1,0 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">11</span>	1000 2500 - 2950		<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">12</span> 100 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">13</span> 1600 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">14</span> 2200 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">15</span> Switching point	min. 20,1 13,2-13,4 12,3-12,5

## C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		19 Test oil temp. 40°C (104°F)	Full-load speed regulation		Variations in fuel delivery		17 Starting fuel delivery Idle	Difference cm³/1000 strokes
rev/min	cm³/1000 strokes		rev/min	rev/min	cm³/1000 strokes	rev/min		
1	2		3	4	5	6	7	8
2200	48,5-50,5 (47,5-51,5)		2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 52,0	6,0
				1000	51,0-52,0 (50,0-53,0)	315	5,0-6,0 (4,5-9,0)	1,0
						2500	29,0-33,0 (28,0-34,0)	(1,5)
								2,5
								(3,0)

Checking values in brackets

\*ca. 4,0 less control rod travel than in Column 2

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1. Testing with ALDA

Point	$\text{min}^{-1}$	cm $_3$ /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. \*\* Checking of idle-auxiliary spring; setting at  $n = 380 \text{ 1/min}$  control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.  
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop.

At  $n = 315 \text{ min}^{-1}$  and  $p_u = 450 \text{ mbar}$  control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

En

## 9. Checking the ELR servo magnet

- Control lever up against idle stop  
At  $n = 340$  1/min,  $I = 1.8$  A, control-rod travel = (12,4-13,8) mm, fuel delivery (41.0-49.0) ccm/1000 strokes.

**Note:**

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At  $n = 2950$  1/min,  $I = 3$  A (briefly), control-rod travel = 0-1.0 mm

**Checking of starting:**

At  $n = 100$  1/min,  $I = 1.8$  A, delivery min. 52.0 ccm/1000 strokes.

## 10. Checking the intermediate control curve (control-lever position)

Control lever 30°,  $n = 1000$  1/min, control-rod travel = 9.5-10.2 mm

## 11. RWG testing and setting with evaluation circuit R2-1.3

### Receiving inspection

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

### RWG setting

At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until  $U = 2.095-2.105$  is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 17,6 a  
4. Edition

**Testoil-ISO 4113**

En

PE 12 P 100/A 520/5 RS 98  
90

PE 12 P 100 A 500/5 RS 98

EP/RSUV 300-750 P5..320R

..300-1150 P0..324R,324DR

supersedes 7.77

company M W M

engine D / TD 232 - 12

1 - 12 - 9 - 4 - 5 - 8 - 11 - 2 - 3 - 10 - 7 - 6 je 30°

Governor basic setting: control lever = 35°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1  
(1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery 10 Ø cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery 9 Ø cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
600	12	12,4 - 13,1	0,5	12	12,8 - 13,6	
	9	6,4 - 7,6		9	7,7 - 8,9	
	15	17,8 - 19,5		15	16,8 - 18,5	
	200	9		9	5,7 - 6,9	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSUV .. P 5/A 320 R

Upper rated speed			Intermediate rated speed			Lower rated speed			Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
ca. 61	750	16,0	without auxiliary spring	ca. 27		300	8,0	730	0		
	770	11,4				100	19 - 21				
	790	6,4				300	7,7-8,3	400	0		
	770	10,4-12,3				350	2,0-4,7				
	800	4,0- 5,8				410	0 - 1	320	1,2-1,8		
	860	0,3- 1,0									
(5)			with auxiliary spring								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load stop	6 Rotational-speed limitat.	3a Fuel delivery characteristics	Starting fuel delivery Idle	5a Idle stop
Test oil temp. 40°C (104°F)	Note: changed to ... rev/min	rev/min cm³/1000 strokes	rev/min cm³/1000 strokes	rev/min Control rod travel mm
rev/min	3	4 5	6 7	8 9

In accordance with nameplate of governor or pages 3 - 9

300 8,0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**B. Governor Settings**

EP/RSUV .. P O / A 324 R

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel		Degree of deflection of control lever	Control rod travel		Degree of deflection of control lever	Control rod travel		Control rod travel	Control rod travel
1	rev/min	mm	4	rev/min	mm	7	rev/min	mm	10	mm
ca. 65	1150	16,0	without auxiliary spring	ca. 24	300	8,0	1100	0	500	0
	1200	9,8			80	19 - 21				
(5)	1220	7,1	with auxiliary spring		300	7,7-8,3	350	1,2-1,8	380	2,8-5,2
	1200	8,3-10,8			500	0 - 1				
	1250	2,8-5,5			300	0 - 1				
	1350	0,3-1,0			300	0 - 1				

The numbers denote the sequence of the tests

**C. Settings for Fuel Injection Pump with Fitted Governor**

(2) Full-load stop			(6) Rotational-speed limitat.			(3a) Fuel delivery characteristics			Starting fuel delivery		(5a) Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	Note changed to rev/min	3		rev/min	cm³/1000 strokes	6	rev/min	cm³/1000 strokes	8	Control rod travel mm
1	2	3	4	5		6	7	8	9	10	11	
In accordance with nameplate of			governor or pages 3 - 9	(6a)						300	8,0	

Checking values in brackets

\* 1 mm less control rod travel than col 2

**B. Governor Settings**

EP/RSUV .. P O / A 324 DR

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel		Degree of deflection of control lever	Control rod travel		Degree of deflection of control lever	Control rod travel		Control rod travel	Control rod travel
1	rev/min	mm	4	rev/min	mm	7	rev/min	mm	10	mm
ca. 65	1150	16,0	without auxiliary spring	ca. 24	300	8,0	1100	0	500	0
	1200	9,8			80	19 - 21				
(5)	1220	7,1	with auxiliary spring		300	7,7-8,3	350	1,2-1,8	380	2,8-5,2
	1200	8,3-10,8			500	0 - 1				
	1250	2,8-5,5			300	0 - 1				
	1350	0,3-1,0			300	0 - 1				

The numbers denote the sequence of the tests

**C. Settings for Fuel Injection Pump with Fitted Governor**

(2) Full-load stop			(6) Rotational-speed limitat.			(3a) Fuel delivery characteristics			Starting fuel delivery		(5a) Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	Note changed to rev/min	3		rev/min	cm³/1000 strokes	6	rev/min	cm³/1000 strokes	8	Control rod travel mm
1	2	3	4	5		6	7	8	9	10	11	
In accordance with nameplate of			governor or pages 3 - 9	(6a)						300	8,0	

Checking values in brackets

En

\* 1 mm less control rod travel than col 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics	Starting fuel delivery idle switching point	Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7

**F 330 PS / 2500 min<sup>-1</sup>**

1250 92,0 - 94,0 1270

**Testoil-ISO 4113****B'324 PS / 2500 min<sup>-1</sup>**

1250 92,0 - 94,0 1270

**B 324 PS / 2500 min<sup>-1</sup>**

1250 92,0 - 94,0 1270

**F 320 PS / 2300 min<sup>-1</sup>**

1150 90,0 - 92,0 1170

**B'310 PS / 2300 min<sup>-1</sup>**

1150 90,0 - 92,0 1170

**B 310 PS / 2300 min<sup>-1</sup>**

1150 90,0 - 92,0 1170

**A 282 PS / 2300 min<sup>-1</sup>**

1185 84,0 - 86,0 1200

**B'288 PS / 2100 min<sup>-1</sup>**

1050 85,0 - 87,0 1060

**B 288 PS / 2100 min<sup>-1</sup>**

1050 85,0 - 87,0 1060

**A 262 PS / 2100 min<sup>-1</sup>**

1080 80,0 - 82,0 1090

**F 288 PS / 2000 min<sup>-1</sup>**

1000 84,0 - 86,0 1010

**B'276 PS / 2000 min<sup>-1</sup>**

1000 84,0 - 86,0 1010

Checking values in brackets

• 1 mm less control rod travel than col. 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min   mm
1	2	3	4	5	6	7	8

**B 276 PS / 2000 min⁻¹**

1000 84,0 - 86,0 1010

**Testoil-ISO 4113****A 252 PS / 2000 min⁻¹**

1030 79,0 - 81,0 1040

**B 254 PS / 1800 min⁻¹**

900 83,0 - 85,0 910

**A'230 PS / 1800 min⁻¹**

900 83,0 - 85,0 910

**A 230 PS / 1800 min⁻¹**

930 78,0 - 80,0 940

**B 216 PS / 1500 min⁻¹**

750 83,0 - 85,0 760

**A'196 PS / 1500 min⁻¹**

750 83,0 - 85,0 760

**A 196 PS / 1500 min⁻¹**

775 78,0 - 80,0 785

**B'315 PS / 2300 min⁻¹**

1150 90,0 - 92,0 1170

Special output

**D 286 PS / 1800 min⁻¹**

900 97,0 - 99,0 910

Emergency power output

**C 260 PS / 1800 min⁻¹**

900 97,0 - 99,0 910

Emergency power output

Checking values in brackets

\* 1 mm less control rod travel than col 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 240 PS / 1500 min<sup>-1</sup>  
 750 96,0 - 98,0 760  
 Emergency power output

**Testoil-ISO 4113**

C 218 PS / 1500 min<sup>-1</sup>  
 750 96,0 - 98,0 760  
 Emergency power output

Checking values in brackets

\* 1 mm less control rod travel than col 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)			Rotational-speed limitation		Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8			

F 420 PS / 2300 min⁻¹  
1150 115,0 - 117,0 1170

**Testoil-ISO 4113**

B'414 PS / 2300 min⁻¹  
1150 115,0 - 117,0 1170

B 414 PS / 2300 min⁻¹  
1150 115,0 - 117,0 1170

A 376 PS / 2300 min⁻¹  
1185 110,0 - 112,0 1200

B'384 PS / 2100 min⁻¹  
1050 110,0 - 112,0 1060

B 384 PS / 2100 min⁻¹  
1050 110,0 - 112,0 1060

A 348 PS / 2100 min⁻¹  
1080 105,0 - 107,0 1090

F 384 PS / 2000 min⁻¹  
1000 107,0 - 109,0 1010

B'368 PS / 2000 min⁻¹  
1000 107,0 - 109,0 1010

B 368 PS / 2000 min⁻¹  
1000 107,0 - 109,0 1010

A 334 PS / 2000 min⁻¹  
1030 102,0 - 104,0 1040

B 336 PS / 1800 min⁻¹  
900 106,0 - 108,0 910

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

1

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

**Testoil-ISO 4113****A'306 PS / 1800 min⁻¹**

900 105,0 - 107,0 910

**A 306 PS / 1800 min⁻¹**

930 100,0 - 102,0 940

**B 284 PS / 1500 min⁻¹**

750 107,0 - 109,0 760

**A'258 PS / 1500 min⁻¹**

750 107,0 - 109,0 760

**A 258 PS / 1500 min⁻¹**

775 102,0 - 104,0 785

**D 375 PS / 1800 min⁻¹**

900 121,0 - 123,0 910

Emergency power output

**C 340 PS / 1800 min⁻¹**

900 121,0 - 123,0 910

Emergency power output

**D 315 PS / 1500 min⁻¹**

750 121,0 - 123,0 760

Emergency power output

**C 286 PS / 1500 min⁻¹**

750 121,0 - 123,0 760

Emergency power output

Checking values in brackets

\* 1 mm less control rod travel than col 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics	Starting fuel delivery Idle switching point	Intermediate rotational speed Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min
1	2	3	4	5	6
					7
					8

B 417 PS / 1800 min<sup>-1</sup>  
900 137,0 - 139,0 910

**Testoil-ISO 4113**

A'378 PS / 1800 min<sup>-1</sup>  
900 137,0 - 139,0 910

A 378 PS / 1800 min<sup>-1</sup>  
930 128,0 - 130,0 940

B 354 PS / 1500 min<sup>-1</sup>  
750 133,0 - 135,0 760

A'321 PS / 1500 min<sup>-1</sup>  
750 133,0 - 135,0 760

A 321 PS / 1500 min<sup>-1</sup>  
780 125,0 - 127,0 790

D 385 PS / 1500 min<sup>-1</sup>  
750 146,0 - 148,0 760  
Emergency power output

C 350 PS / 1500 min<sup>-1</sup>  
750 146,0 - 148,0 760  
Emergency power output

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

**Testoil-ISO 4113****B 398 PS / 1800 min⁻¹**

900 137,0 - 139,0 910

**A'359 PS / 1800 min⁻¹**

900 137,0 - 139,0 910

**A 359 PS / 1800 min⁻¹**

930 130,0 - 132,0 940

**B 339 PS / 1500 min⁻¹**

750 135,0 - 137,0 760

**A'306 PS / 1500 min⁻¹**

750 135,0 - 137,0 760

**A 306 PS / 1500 min⁻¹**

780 128,0 - 130,0 790

**D 355 PS / 1500 min⁻¹**

750 142,0 - 144,0 760

**Emergency power output****C 320 PS / 1500 min⁻¹**

750 142,0 - 144,0 760

**Emergency power output**

Checking values in brackets

• 1 mm less control rod travel than col. 2

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 IHC 9,4 a 1

1. Edition

En

PES 8 P 100 A 921/5 RS 286      RQV 325-1250 PA 274 KR  
Komb.-Nr. 0 402 0 8 036

supersedes -  
company IHC  
engine DVT 573 B

1-8-4-2-7-3-6-5

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 9 681 230 713

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,7-2,8

(2,65-2,85)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	10,9-11,1	0,4			
325	ca. 5,0	1,7-2,3				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm 1	Control rod travel mm 2	Degree of deflection of control lever	rev/min 3	Control rod travel mm 4	Degree of deflection of control lever	rev/min Control rod travel mm 7	rev/min 8	Control rod travel mm 3	rev/min Control rod travel mm 10	mm 11
cá. 66	1320	15,0-18,0	-	--	-	ca. 10	100	7,1-8,0	-	-	-
	1400	9,6-13,9					220	5,7-8,0			
	1520	0-7,4					340	2,8-5,0			
	1640	0					400	2,2-3,8			
							550	0-1,1			
							670	0			

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min ③		Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④		Starting fuel delivery idle switching point ⑥ rev/min ⑦		Torque-control travel ⑤ Control rod travel mm ⑨ rev/min ⑧	
1	2	3	4	5	6	7	8	9	
LDA 1250	0.8 bar 109,0-111,0 (107,0-113,0)	1290-1300*	LDA 900	0,8 bar 115,0-121,0 (113,0-123,0)	100	min. 176,0	1250 900 700	9,6-9,7 10,1+0,2 9,8+0,2	
			LDA 800	0 bar 73,0-81,0 (71,0-83,0)	325	17,0-23,0			

Checking values in brackets

\* 1 mm less control rod travel than col 2

/.80

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# D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4 a 1

- 2 -

Test at n = 800 rev/min decreasing increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure =	Measurement Gauge pressure =	Control rod travel mm (1)	diminution difference
PES 8 P ... RS 286 +RQV ... PA 274 KR	0,1-0,16	0,80-0,87	Start of timing advance End of timing advance	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4 DEE 7,6 a 1

3. Edition

En

PES 6 P 110 A 720 RS 361      US-RSV 400-1100 P 2/497  
 Komb.-Nr. 9 400 231 108  
 Use overflow valve 1 457 413 010

supersedes 7.84  
 company John Deere  
 engine 6466 A  
 161 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,75-2,85

Port closing at prestroke (2,70-2,90) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	5
1100	11,3+0,1	15,0-15,3	0,4(0,75)			
400	5,5-5,7	0,8-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Degree of deflection of control lever	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed rev/min		3 Torque control rev/min	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.24	400	5,2	1100	11,0-11,1
ca.48	10,3	1140-1150					100	min.19,0	950	11,0-11,2
(2a)	4,0	1240-1270					400	5,6-5,8	700	11,5-11,7
	1350	0,3-1,7					510-670	= 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit! Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
LDA 1100	0,9 bar 149,5-152,5 (147,0-155,0)	1140-1150*	LDA 950 LDA 500	0,9 bar 151,0-155,0 (148,0-158,0) 0 bar 119,5-123,5 (116,5-126,5)	100	160,0-180 (156,0-184,0)	0 400	5,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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## D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 a 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	Measurement Gauge pressure =	Control rod travel- diminution difference mm (1)
PES6P..RS361 + US-RSV..P2/497	0,38	0,24 0	11,25-11,35 10,40-10,80 10,20-10,40

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 CAT 10,5 g

1. Edition

En

PES 6 P 100 A 720 LS 502  
Komb.-Nr. 9 400 087 344

RQV 350-1100 PA798-1

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing i 680 750 008supersedes  
company Caterpillar  
engine 3306 DIT  
138 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,95-4,05

Port closing at prestroke

(3,90-4,10)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1100	9,6-9,7	10,4-10,5	0,35(0,6)			
350	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel					
Degree of deflection of control lever	rev/min	Control rod travel mm	⑩	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm	①
1	2	3	②a	4	5	6	④	7	8	9	③	10	mm	11
max.	1150	15,2-17,8		-	-	-		ca. 12	100	min. 8,0	350	1,3-1,5		
ca. 64	8,6	1130-1140							350	4,9-6,1	500	2,9-3,2		
	4,0	1185-1215							500-560 = 2,0	700	4,5-4,8			
	1320	0-1,0							370-440	900	6,0-6,2			
										1150	8,6			

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	②b rev/min	⑤a rev/min	⑥ rev/min	⑤ Control rod travel mm
1100	103,5-104,5 (101,0-107,0)	1130-1140*	500	105,5-109,5 (103,5-111,5)	100 350 mm RW
				157,0-177,0 (153,0-181,0) 4,9-5,1	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

F1

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# (2) Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 MAN 11,1 w 4

En

1. Edition

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-12

Komb.-Nr. 0 402 046 317

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

~~Mercedes-~~

company MAN

engine D 2566 MLUM/US

MAN-Nr. 2-7699

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,0-3,1  
(2,95-3,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
750	10,1+0,1	14,5-14,7	0,5(0,9)			
	5,8-6,0	1,2-1,8		0,8(1,2)		

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications	rev/min	Setting point rev/min	Control rod travel mm	Test specifications	rev/min	Control rod travel mm	
19,2-20,8	600	600	20,0	8,4 4,0 1350	1145-1160 1175-1205 0-1,0	300	5,9	100 300 360-400 = 2,0	min. 7,4 5,8-6,0 = 2,0	750 1100 810 915	10,2-10,3 9,4-9,5 9,9-10,1 9,5-9,8
VH = ca. 46°											

Torque-control travel  
on flyweight assembly dimension a =

0,30 mm

1145-1160 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm
LDA	1,0 bar	-		LDA	0,35 bar	100	225,0-245,0
750	145,0-147,0			500	129,0-141,0		(221,0-249,0)
	(142,0-150,0)				(126,0-144,0)		
1100	153,0-157,0			LDA	0 bar		
	(150,0-160,0)			500	111,0-113,0		
650	138,0-144,0				(108,0-116,0)		
	(135,0-147,0)						

Checking values in brackets

7.86

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# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 w 4

- 2 -

Test at n = 500 rev/min decreasing increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure =	Measurement Gauge pressure =	Control rod travel mm	diminution (1)
PES 6 P..LS 388 + RQ..PA 658-12	1,0	0 0,25 0,32		10,1-10,2 9,2-9,3 9,4-9,5 9,7-10,0

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full load control rod travel)

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DAF 8,3 o 14  
1. Edition

En

PE 6 P 100 A 720 RS 447 RSV 250-1200 P5A 509  
Komb.-Nr. 0 401 876 302

supersedes  
company DAF  
engine DHT 825  
162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,2-3,3  
Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	11,4+0,1	11,9-12,1	0,35 (0,6)			
250	5,2-5,4	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in □

## B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800 X = 5,0	0,3-0,7	-	-	-	ca. 24	250	4,8	1000	11,6-11,7
ca. 58 (2a)	10,4 1530	1240-1250 4,0 1325-1355					250 560-620 = 2,0	5,2-5,4	400 300	11,6-11,8 11,9-12,4

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note changed to ) rev/min	(3a) Fuel delivery characteristics		Starting fuel delivery Idle	(5)	(4a) Idle stop	
rev/min	cm³/1000 strokes	3	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
LDA 1000	0,7 bar 118,5-120,5 (116,5-122,5)	1240-1250*	LDA 600	0 bar 92,5-96,5 90,0-99,0	100	210,0-230,0 (206,0-234,0)	-	-
					250	8,0-12,0 (5,5-14,5)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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F4

# D. Adjustment Test for Manifold Pressure Compensator

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure  
increasing

DAF 8,3 o 14

-2-

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure =	bar	mm (1)
PE6P..RS 447 +RSV..P5A 509	0,70	0 0,32 0,23	11,4-11,5 10,4-10,5 11,1-11,2 10,2-10,7

Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

② **Test Specifications  
Fuel Injection Pumps ②  
and Governors**

**40**

WPP 001/4 MAN 11,9 a 14

1. Edition

En

PES 6 P 120 A 720/3 LS 470-2 RQ 300/1100 PA 658-21

Komb.-Nr. 0 402 036 055

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company MAN

engine: D 2866 LUH

243 kW/2200 min<sup>-1</sup>

MAN-Nr. 2-7711

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings**

Port closing at prestroke 2,8-2,9  
(2,75-2,95) mm (from BDC) Cy1. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	11,3+0,1	20,5-20,7	0,5 (0,9)			
300	4,9-5,1	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings**

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm	rev/min	Setting point Control rod travel mm	Control rod travel mm	Test specifications	rev/min	Setting point Control rod travel mm	Control rod travel mm	Test specifications	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,1 4,0	1145-1160 1185-1215	300	5,0	100 300 350-390	min. 6,5 4,9-5,1 = 2,0	750 1100 925	11,6-11,7 11,1-11,2 11,3-11,4
VH = max. 46°				1300	0 - 1,0						

Torque-control travel on flyweight assembly dimension a = 0,20 mm Speed regulation: At 1145-1160 min<sup>-1</sup> 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	Control rod travel
1	2	3		4	5	6	7	
LDA	1,0 bar		-	LDA	0,44 bar			
750	205,0-207,0 (202,0-210,0)			500	182,0-190,0 (179,0-193,0)			
1100	213,0-217,0 (210,0-220,0)			LDA	0 bar			
				500	130,0-132,0 (127,0-135,0)			

Checking values in brackets

4.86

**BOSCH**

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

MAN 11,9 a 14

- 2 -

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel- diminution difference	
					mm	(1)
PES 6P..LS 470-2 +RQ..PA 658-21	1,0		0		11,3-11,4	
			0,23		9,0-9,1	
			0,44		9,3-9,4	
					10,6-10,9	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 10,0 e

2. Edition

En

PE 5 P 110 A 720 RS 479      RQ 300/1050 PA 718-1  
Komb.-Nr. 9 400 087 308

supersedes 10.85  
company: Daimler-Benz  
engine: OM 355-5 A  
170,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,35-3,45

Port closing at prestroke      (3,30-3,50)      mm (from BDC)

Cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,2+0,1	16,1 - 16,3	0,4 (0,75)			
300	6,4-6,6	1,1 - 1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Control rod travel mm	Control rod travel mm		
Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm	rev/min	rev/min		
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	11,2	1095-1110	300	6,5	100	min. 8,5	1050	12,2-12,3
VH = 49°				4,0	1160-1180	300	6,4- 6,6	300	6,4- 6,6	600	13,1-13,2
				1300	0-1,0	380-	420= 2,0	380-	420= 2,0	900	12,8-13,0

Torque-control travel  
on flyweight assembly dimension a = 0,35 mm

Speed regulation: At 1095 - 1110 min⁻¹

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min	Fuel delivery characteristics		Starting fuel delivery Idle speed rev/min	Control rod travel mm
rev/min	cm³/-1000 strokes	3	rev/min	cm³/-1000 strokes	6	7
LDA 1050	0,7 bar 161,0 - 163,0 (158,0 - 166,0)	-	LDA 600	0,7 bar 177,0 - 181,0 (174,0 - 184,0)	100	150,0 - 170,0
			LDA 00	0,7 bar 174,0 - 178,0 (171,0 - 181,0)		
			LDA 500	0 bar 112,5 - 115,5 (110,0 - 118,0)		

Checking values in brackets

7.86

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure MB 10,0 e

- 2 -

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel-diminution mm (1)	
					Control rod travel-difference	
PE 5 P..RS 479 + RQ..PA 718-1	0,70		0		13,1	- 13,2
			0,40		10,3	- 10,4
			0,25		12,4	- 12,5
					11,1	- 11,3

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 7,1 b1

1. Edition

En

PE 6 P 110 A 320 RS 494 RQV 300-1100 PA 435-1  
Komb.-Nr. 0 401 846 515supersedes-  
company: Volvo  
engine. TD 71 G  
147 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings**Port closing at prestroke 3,0-3,1  
(2,95-3,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	10,5+0,1	9,8-10,0	0,4(0,8)			
300	4,6-4,8	1,2- 1,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

**B. Governor Settings**

Upper rated speed Degree of deflection of control lever 1	rev/min Control rod travel mm	Control rod travel mm rev/min	① ②a	Intermediate rated speed			Lower rated speed			Sliding sleeve travel ① ③
				④ ④a	⑤ ⑤a	⑥ ⑥a	⑦ ⑦a	⑧ ⑧a	⑨ ⑨a	
max.	1200	15,2-17,8	-	-	-	-	ca. 11	100 min. 6,1	250	1,0-1,2
ca. 64	9,5	1140-1150						300 4,6-4,8	530	3,3-3,5
	4,0	1210-1240							820	5,0-5,2
	1300	0- 1,0					350-510		1100	7,6
							(3a)			

Torque control travel a = - mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed ②b ④b	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel Control rod travel mm ⑤ ⑧		
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1140-1150*	LDA	0 bar	100	150,0-190,0	-	-
700	98,0-100,0 (95,0-103,0)		700	78,0-81,0 75,0-84,0)	300	12,0- 16,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.86

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

VOL 7,1 b1

- 2 -

Pump/governor	Setting	Measurement		Control rod travel- diminution (1)
		Gauge pressure =	bar	
PE 6 P .. RS 494 + RQV..PA 435-1	0,70	0	0,34 0,23	10,5-10,6 9,5- 9,6 10,3-10,4 9,6- 9,8

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 7,1 b2

1. Edition

En

PE 6 P 110 A 320 RS 494 RQV 300-1100 PA 435-2  
Komb.-Nr. 0 401 846 516supersedes-  
company: Volvoengine: TD 71 G  
136 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1  
(2,95-3,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	10,2+0,1	9,2-9,4	0,4(0,8)			
300	4,6-4,8	1,2-1,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6	④	7	8	9	③	10	11
max.	1200	15,2-17,8	-	-	-	-	-	ca. 11	100	min. 6,1	-	250	1,0-1,2
ca. 64	9,2	1140-1150							300	4,6-4,8		530	3,3-3,5
	4,0	1200-1230										820	5,0-5,2
	1300	0- 1,0										100	7,6

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation Intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	④	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	④	4	5	6	7	8	9
LDA 700	0,7 bar 92,0-94,0 (89,0-97,0)	1140-1150*		LDA 700	0 bar 78,0-81,0 (75,0-84,0)	100	150,0-190,0	-	-
						300	12,0- 16,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.80

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# D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel mm	diminution (1)
	Gauge pressure = bar	Gauge pressure = bar		difference
PE 6 P..RS 494 +RQV..PA 435-1	0,70	0 0,29 0,23	10,2-10,3 9,5- 9,6 10,0-10,1 9,6- 9,8	

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 7,1 b

1. Edition

En

PE 6 P 110 A 320 RS 494 RQV 300-1200 PA 435-3  
Komb.-Nr. 0 401 846 517supersedes-  
company: Volvo  
engine: TD 71 GA  
157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,0-3,1

Port closing at prestroke (2,95-3,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	10,9+0,1	10,7-10,9	0,4(0,8)			
300	4,6-4,8	1,2- 1,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	--	-	ca. 11	100 min. 6,1			
ca. 66	9,9	1240-1250					300 4,6-4,8			
	4,0	1320-1350					350-510			
	1400	0- 1,0								

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	rev/min
1	2	3	4	5	6	7
LDA 700	1,0 bar 107,0-109,0 (104,0-112,0)	1240-1250*	LDA 1000	1,0 bar 109,5-112,5 (106,0-116,0)	100	150,0-190,0
			LDA 700	0 bar 89,0-91,0 (86,0-94,0)	300	12,0- 16,0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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7.86

## D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b

- 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure

500

increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel mm	diminution (1)
PE 6 P .. RS 494 + RQV..PA 435-3	1,0		0		10,9-11,0	
			0,38		10,0-10,1	
			0,29		10,7-10,8	
					10,2-10,4	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 7,1 b3

1. Edition

-60-

PE 6 P 110 A 320 RS 494-1 RQV 300-1200 PA 435-4  
Komb.-Nr. 0 401 846 524

supersedes -  
company: Volvo  
engine: TD 71 K  
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

#### **A. Fuel Injection Pump Settings**

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	5
700	11,9+0,1	12,1-12,3	0,4(0,75)			
300	4,8-5,0	1,7- 2,1				

**Adjust the fuel delivery from each outlet according to the values in**

## **B. Governor Settings**

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	1a	Degree of deflection of control lever		Control rod travel	4	Degree of deflection of control lever		Control rod travel	3	rev/min	mm
1	2	mm	2a	4	5	mm	7	8	9	3	10	mm	11
max.	1200	15,2-17,8		-	-	-		ca. 11	100	min. 6,3			
ca. 66	10,9	1240-1250							300	4,8-5,0			
	4,0	1320-1350											
	1400	0- 1,0						350-510					
								(3a)					

Torque control travel = ? mm

### **C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4a	4	5	6	7	8	9
LDA 700	1,0 bar 121,0-123,0 (118,0-126,0)	1240-1250*	LDA 1000	1,0 bar 120,5-123,5 (117,0-127,0)	100	165,0-185,0	-	-	-
			LDA 700	0 bar 79,0-81,0 (76,0-84,0)	300	17,0- 21,0			

#### **Checking values in brackets**

• 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b3

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel		diminution difference
					mm	(1)	
PE 6 P..RS 494-1 +RQV..PA 435-4	1,0		0 0,60 0,28		11,9-12,0 9,6- 9,7 11,7-11,8 9,8-10,0		

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 CAT 10,5 g 1

1. Edition

En

PES 6 P 100 A 720 LS 502  
Komb.-Nr. 9 400 087 345

RQV 350-950 PA 798-2

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 008supersedes  
company Caterpillar  
engine 3306 DIT  
114 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,95-4,05  
(3,90-4,10)

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	8,7-8,8	8,8-8,9	0,35(0,6)			
350	6,4-6,6	1,3-1,7	0,35			

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	1	
1	2	3	2a	4	5	6	4	7	8	9	3	
max.	1055	15,2-17,8		-	--	-		ca. 15	100	min.8,5	300	1,1-1,4
ca. 65	7,7	980-990							350	4,9-5,1	500	3,4-3,7
	4,0	1025-1055							480-540 = 2,0		700	5,2-5,5
	1180	0-1,0									900	6,8-7,0
											1055	8,6

Torque control travel a = 0,70 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	4a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
950	88,0-89,0 (85,5-91,5)	980-990*		500	100,0-104,0 (98,0-106,0)	100	157,0-177,0 (153,0-181,0)	950	8,7-8,8 9,4-9,5
				800	91,0-95,0 (89,0-97,0)			800	9,1-9,3
								850	8,9-9,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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6.86

Testoil-ISO 4113

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 CAT 7,0 d 2

1. Edition

En.

PES 4 P 100 A 720 LS 504  
Komb.-Nr. 9 400 087 340

RQV 350-1100 PA 798-3

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes -  
company: Caterpillar  
engine: 3304 DINA  
78 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,95-4,05  
(3,90-4,10)

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,7-9,8	8,6-8,7	0,35(0,6)			
350	6,8-7,0	1,3-1,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		①		
Degree of deflection of control lever	rev/min	Control rod travel mm	① 1a	Degree of deflection of control lever	rev/min	Control rod travel mm	④ 4	Degree of deflection of control lever	rev/min	Control rod travel mm	③ 3	rev/min	mm
max.	1150	15,2-17,8	-	--	-			ca. 14	100	min. 9,5	350	350	1,3-1,7
ca. 67	8,7	1130-1140							350	5,1-5,3	450	450	3,2-3,5
	4,0	1190-1220							460-520 = 2,0	600	1000	600	4,4-4,7
	1320	0-1,0							320-390		1150	1150	7,0-7,2
													8,6

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm ⑨	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	cm³/1000 strokes 9
1100	86,0-87,0 (83,5-89,5)	1130-1140*	700	82,0-86,0 (80,0-88,0)	100	165,0-185,0 (161,0-189,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

b.86

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 CAT 7,0 d 1

1. Edition

En

PES 4 P 100 A 720 LS 504  
Komb.-Nr. 9 400 087 342

RQV 350-950 PA 798-4

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes—  
company: Caterpillar  
engine: 3304 DINA  
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,95-4,05  
(3,90-4,10) mm (from BDC). RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	8,9-9,0	7,9-8,0	0,35(0,6)			
350	6,8-7,0	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed Degree of deflection of control lever 1	Intermediate rated speed			Lower rated speed			Sliding sleeve travel							
	rev/min 2	Control rod travel mm 3	①a	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	③	rev/min 10	mm 11	①
max.	1050	15,2-17,8		-	-	-		ca. 14	100	min.8,5		350	1,3-1,7	
ca. 64	7,9	980-990							350	5,1-5,3		500	3,3-3,6	
	4,0	1025-1055							490-550 = 2,0			700	5,1-5,4	
	1150	0-1,0							320-390			900	6,8-7,0	
												1050	8,6	
								③a						

Torque control travel a = 0,5 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a		Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel Control rod travel mm ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	rev/min 5	cm³/1000 strokes 6	rev/min 7	cm³/1000 strokes 8	rev/min 9	
950	79,0-80,0 (76,5-82,5)	980-990*	500	65,5-69,5 (63,5-71,5)	100	165,0-185,0 (161,0-189,0)	950	8,9-9,0 9,4-9,5	
			700	73,5-77,5 (71,5-79,5)	350	5,1-5,3 mm RW	500		
							700	9,2-9,4	
							800	8,9-9,2	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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5.86

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 CAT 7,0 d

1. Edition

En

PES 4 P 100 A 720 LS 504  
Komb.-Nr. 9 400 087 343

RQV 350-1000 PA 798-5

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 008supersedes  
company Caterpillar  
engine: 3304 DINA  
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05  
(3,90-4,10) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	8,7-8,8	7,4-7,5	0,35(0,6)			
350	6,8-7,0	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		1			
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	3	rev/min	mm	1
1	2	3	2a	4	5	6	4	7	8	9	3	10	11	1
max.	1050	15,2-17,8		-	-	-		ca. 14	100	min. 8,5		350	1,3-1,7	
ca. 65	7,7	1030-1040							350	5,1-5,3		500	3,3-3,6	
	4,0	1070-1100							490-550=2,0			700	5,1-5,4	
	1200	0-1,0							320-390			900	6,8-7,0	
												1050	8,6	
(3a)														

Torque control travel a = 0,4 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	2b	4b	5a	5b	6	7	8	9
1	2	3		4	5	6	7	8	9
1000	74,0-75,0 (71,5-77,5)	1030-1040*		500	60,5-64,5 (58,5-66,5)	100	165,0-185,0 (161,0-189,0)	1000	8,7-8,8 500
				800	72,0-76,0 (70,0-78,0)	350	5,1-5,3 mm RW	800	9,1-9,2 8,9-9,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.66

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# **Test Specifications Fuel Injection Pumps and Governors**

40

WPP 001/4 IHC 13.4 e

2. Edition

En

PES 6 P 110 A 420 LS 3037

FP/RSV 350-1050 P2/425 DB

Supersedes 5.83

company IH

Company 570 DTI-817 C

**Komb.-Nr. 0 402 076 710**

Values only apply to test nozzle-and-holder assembly

Values only apply to test nozzle and nozzle assembly  
1 688 901 018 and fuel-injection test tubing 9 681 230 724

1-888-557-0732 (USA) | info@tutor.com | 888-557-0732

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

Suction-gallery pressure 2,8 bar

2,0 - 2,1  
(1,95-2,15)

mm (from BDC)

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0	-	-	-	ca. 21	100	20,0-21,0	1050	11,3-11,4	
ca. 45	10,3	1090-1100					200	11,0-21,0	700	12,1-12,3	
2a	4,0	1145-1175					350	4,6	550	12,1-12,3	
	1300	0,3 - 1,7					390-420	=2,0			

The numbers denote the sequence of the tests.

### **C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to → rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop Control rod travel mm	
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min		rev/min
1	2	3	4	5	6	7	8	9	
LDA 1050	0,8 bar 199,0-201,0 (197,0-203,0)	1090-1100*	LDA 750 LDA 800	0,8 bar 202,0-208,0 (199,0-211,0) 0 bar 145,0-153,0 (142,0-156,0)	100 350	180,0-205,0 20,0-25,0	-	-	-

### **Checking values in brackets**

\* 1 mm less control rod travel than col. 2

7,86

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

800

rev/min decreasing pressure - in bar gauge pressure  
increasing pressure - in bar gauge pressure

IHC 13,4 e

- 2 -

Pump/governor	Setting Gauge pressure =      bar	Measurement Gauge pressure =      bar	Control rod travel-diminution mm      (1)
PES6P..LS3037 EP/RSV..P2/425DR	0,19 - 0,25	0,49 - 0,52	Saugregelweg + 0,5 mm 10,8 - 10,9

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 h

1. Edition

En.

PE 12 ZWM 160/120 RS 2012

Komb.-Nr. 0 406 030 004

12- 9- 4- 5- 8- 11- 2- 3- 10- 7- 6- 1

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Replaces -

Firm MTU

Engine 12 V 396-03

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

**A. Fuel-injection-pump settings**

Port closing at prestroke (2,45-2,65)		mm (from BDC)		Cyl. 12	
Rotational speed min⁻¹	Control-rod travel mm	Fuel delivery Average value cm³/1000 strokes	Difference in fuel delivery cm³/1000 strokes	Fuel delivery Checking values cm³/1000 strokes	Spring pre-tension (torque-control valve)
1000	18,0	630,0-644,0	20 (30)	625,0-649,0	-
1000	9,0	212,0-240,0	28 (42)	207,0-245,0	
350	9,0	132,0-156,0	16 (24)	127,0-161,0	

Adjust the fuel delivery from each outlet according to the values in

**B. Governor settings**

Upper rated speed		Medium rated speed		Lower rated speed		Torque control	
Control lever deflection degrees	mm	Control lever deflection degrees	mm	Control lever deflection degrees	mm	Control rod travel mm	Control rod travel mm
1	2	3	4	5	6	7	8

Torque control travel a =

mm

Speed regulation: At

1 mm less control rod travel

**C. Settings for fuel-injection pump with fitted governor**

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹	cm³/1000 strokes	min⁻¹		min⁻¹	cm³/1000 strokes	min⁻¹	cm³/1000 strokes
			Adjust according to the engine records.	-	-	-	-

Checking values in brackets

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

WPP 001/84 IHC 13,4 d 40

2. Edition

En

PES 6 P 110 A 420 LS 3043

RSV 350-1100 P0/431 DR

supersedes 3.83

company IHC

engine DTI 817 C

309 kW (420 PS)

Komb.-Nr. 0 402 076 712

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke (1,95-2,15)

mm (from BDC)

13  
11  
4  
10  
9  
8  
7  
6  
5  
4  
3  
2

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1100	15,4+0,1	25,8-26,0	0,8			
300	5,6-5,8	0,7-1,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control-lever deflection in degrees	Control rod travel mm	Control rod travel mm rev/min	Control rod travel mm
loose	800	0,3-1,0	ca. 20	350	5,5	1080
				100	20,0-21,0	750
ca. 44	1100	15,6-16,2 1200 6,0-9,2 1280 1,3-2,0	ca. 20	350	5,4-5,6	500
				410	1,3-2,0	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limit Note changed to	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	control rod travel mm
LDA 1100	1,2 bar 257,5-259,5 (254,5-262,5)			LDA 700 LDA 500	1,2 bar 284,5-288,5 (281,5-291,5) 0 bar 151,5-155,5 (148,5-158,5)	100	255,0-295,0		

Checking values in brackets

\* + mm less control rod travel than col 2

6.86

G1

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## D. Adjustment Test for Manifold Pressure Compensator

IHC 13,4 d - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1)	diminution difference
PES 6 P.. LS 3043 + RSV..P0/431 DR	0,09-0,17	0,80-0,93		Beginn Ende

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps 1A and Governors

**40**

WPP 001/4 DEE 10,1 b

3. Edition

En

US-PES 6P 110 A 720 RS 3086 US-RSV 400-1050 P0/492-1

Komb.-Nr. 9 400 231 174

Values apply to fuel-injection test tubing 9 681 230 705

supersedes 11.85

company John Deere

engine 6619 A

215 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,45-3,55

Port closing at prestroke (3,40-3,60) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	13,9+0,1	21,4-21,6	0,4 (0,75)			
400	6,0-6,2	1,9-2,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 21	400	5,6	1050	13,9-14,0
X =							400	6,0-6,2	700	14,3-14,6
Ca. 42	12,9	1090-1100					540-600	= 2,0		
2a	4,0	1185-1215								
	1280	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limitat Note changed to ) rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ Idle stop rev/min	④a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
LDA 1050	1,0 bar 213,5-215,5 (210,5-218,5)	1090-1100*	LDA 700	1,0 bar 223,5-226,5 (220,0-230,0)	100	135,0-155,0	400	6,1
			LDA 500	0 bar 136,5-139,5 (133,0-143,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

**7.86**

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**G3**

Testoil-ISO 4113

G3

## D. Adjustment Test for Manifold Pressure Compensator

DEE 10,1 b

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel- mm (1)	diminution difference
US-PES6P..RS 3086 +RSV.. P0/492-1	0,48		0,26			14,1 - 14,2 12,9 - 13,3

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full load control rod travel)

② **Test Specifications  
Fuel Injection Pumps ②  
and Governors**

**40**

WPP 001/4 KHD 9,6 n

2. Edition

En

PES 6 P 110 A 720 RS 3104      RQ 900 PA 738  
Komb.-Nr. 0 402 046 759

supersedes 9.84

company KHD

eng.n.

BF 6 L 413 FR  
161 kW/1800 min<sup>-1</sup>  
Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings**

Port closing at prestroke      2,8-2,9  
(2,75-2,95)      mm (from BDC)      RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
850	12,6+0,1	14,7-14,9	0,4(0,75)	2	3	6
	300	6,7-6,9	1,3-1,9			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings**

Checking of slider PRG check Control rod travel mm		Full-load speed regulation Setting point Control rod travel mm				Idle speed regulation Setting point Control rod travel mm				Torque control Control rod travel mm	
rev/min	1	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,6 5,5 1050	900-905 936-945 0-1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = - mm      900-905 min<sup>-1</sup>      1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min		Fuel delivery characteristics rev/min		Starting fuel delivery idle speed Control rod travel mm	
rev/min	1	2	3	4	5	6	7
850	147,0-149,0 (144,0-152,0)	-	-	-	-	-	-

Checking values in brackets

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G5

G5

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 15,8 n

2. Edition

En

PE 10 P 110 A 920/5 LS 3138  
Komb.-Nr. 0 401 849 712

RQ 300/1150 PA 535-1

1-10- 9- 4- 3- 6- 5- 8- 7- 2  
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)supersedes 7.85  
company KHDengine BF 10 L 413 FZT  
265 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
800	12,0+0,1	9,7-10,0	0,4(0,75)			
300	8,6-8,8	1,1-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min	1	Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point rev/min	Control rod travel mm	Test specifications rev/min	4	Setting point rev/min	Control rod travel mm	Test specifications rev/min	5	Control rod travel mm	3
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,9	600	20,0	10,3 4,0 1350	1195-1210 1235-1265 0-1,0	300	7,0	100 300 370-430 = 2,0	min. 8,4 6,9 - 7,1 = 2,0	1150 800	11,3-11,4 12,0-12,1
VH = max. 46°											

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)	2	Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed		6
		rev/min	3	rev/min	4	cm³/-1000 strokes	6	
1	2	3	4	5	6	7	7	6
LDA 800	0,9 bar 143,5-146,5 (141,0-149,0)	-	-	-	-	-	-	-

Checking values in brackets

7.86

BOSCH

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## D. Adjustment Test for Manifold Pressure Compensator

KHD 15,8 n

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel mm	diminution difference (1)
		Gauge pressure = bar	Gauge pressure = bar		
PE 10 P..LS 3138 + RQ..PA 535-1	0,90	0		12,0-12,1	
		0,50		10,0-10,1	
		0,35		11,5-11,6	
				10,2-10,4	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

G7

En G7

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 b  
3. Edition

En

PES 6 P 110 A 720 RS 3145

RQV 350-1300 PA 748

supersedes 1.86  
company Ford  
engine 6,6 l TC  
123 kW

Komb.-Nr. 9 400 087 305

Values only apply to test nozzle-and-holder assembly  
1 688 901 017 and fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35  
(4,20-4,40)

Port closing difference between control-rod travel 10,5 mm and max. 3,5-4° camshaft

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	11,6+0,1	9,4-9,7	0,4(0,75)			
350	6,9-7,1	1,0-1,5				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	Control rod travel mm			Intermediate rated speed Degree of deflection of control lever			Lower rated speed Degree of deflection of control lever			Sliding sleeve travel rev/min	
	1	2	3	4	5	6	7	8	9	10	11
Max.	1350	15,2-17,8	-	-	-	-	ca. 16	100	min. 10,0	350	0,6-1,3
ca. 64	10,6 4,0 1600	1360-1370 1470-1500 0-1,0	-	-	-	-	ca. 16	350 580-640=2,0	6,9-7,1 370-440	500 800 1000 1300	2,3-2,7 4,0-4,3 5,0-5,3 7,3

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	rev/min
1300	93,5-96,5 (91,0-99,0)	1360-1370*	600	87,5-91,5 (84,5-94,5)	100 105,0-125,0 (101,0-129,0) = 20,0-21,0 mm RW	- -

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 FOR 7,8 a 2

2. Edition

En

PES 6 P 110 A 720 RS 3150 RQV 350-1300 PA 776-2

Komb.-Nr. 9 400 087 336

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 015

supersedes 4.86

company: Ford

engine: 7,8 I - TC

210 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35 (4,20-4,40) mm (from BDC), RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1 1300	12,3+0,1	12,6-12,8	0,5 (0,9)			
350	7,6-7,8	2,3-2,7	0,35(0,55)			
Port closing difference between control-rod travel 12 mm and max. 2,0-3,0° camshaft						

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6	④	7	8	9	③	10	11
max.	1300	15,2-17,8		-	-	-		ca. 16	100	min. 9,5	350	0,6-1,3	
ca. 62	11,3	1360-1370							350	7,6-7,8	500	2,3-2,7	
	4,0	1470-1500							590-650 = 2,0		800	4,0-4,3	
	1620	0-1,0							370-440		1000	5,0-5,3	
											1700	7,3	
(3a)													

Torque control travel a = 0,3 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery Idle switching point	Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7
LDA 1300	0,55 bar 126,0-128,0 (124,0-130,0)	1360-1370*	LDA 1000	0,55 bar 118,0-122,0 (116,0-124,0)	100	148,0-168,0 (144,0-172,0)
LDA 600	0,55 bar 90,5-94,5 (88,5-96,5)		LDA 500	0 bar 77,0-79,0 (74,0-82,0)	350	23,0-27,0 (20,5-29,5)
						1300 600 1050 1000
						12,3+0, 12,6+0, 12,5+0, 12,5+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.85

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G9

## D. Adjustment Test for Manifold Pressure Compensator

FOR 7,8 a 2 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel: mm	diminution (1)
PES 6 P..RS 3150 + RQV..PA 776-2	0,55		0 0,42 0,37		12,6-12,7 12,3-12,4 12,4-12,5 12,3-12,4	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 FOR 7,8 b1

1. Edition

En

PES 6 P 110 A 720 RS 3151  
Komb.-Nr. 9 400 087 367

RQV 350-1200 PA 777-1

supersedes  
company Ford  
engine 7,8 TC  
165,4 kWValues only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (4,20-4,40) mm (from BDC) Cyl. 1; RW 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1 1200	14,1+0,1	14,2-14,4	0,5 (0,9)			
350	7,4-7,6	1,6-2,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min	Control rod travel mm	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6	④	7	8	9	③	10	11
max.	1300	15,2-17,8	-	-	-	-	ca. 15	100	min. 9,0	350	0,6-1,3		
ca. 65	13,1	1260-1270						350	7,4-7,6	500	2,3-2,7		
	4,0	1425-1455						620-680	= 2,0	800	4,0-4,3		
	1600	0 - 1,0						370-440		1000	5,0-5,3		
							③a			1300	7,3		

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④b		Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	6	7	8	9
LDA 1200	0,8 bar 141,5-143,5 (139,5-145,5)	1260-1270*	LDA 600	0,8 bar 108,0-112,0 (106,0-114,0)	100	150,0-170,0 146,0-174,0 = 20,0-21,0 mm RW		-	-
			LDA 500	0 bar 73,0-75,0 (70,0-78,0)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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7.86

G1

Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

FOR 7,8 b1

-2-

Test at n = rev/min decreasing pressure - in bar gauge pressure  
increasing pressure - in bar gauge pressure

500

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel-diminution mm (1)	
					mm	difference
PES 6 P..RS 3151 + RQV..PA 777-1	0,80		0		13,8-13,9	
			0,58		12,1-12,2	
			0,39		13,7-13,8	
					12,6-12,8	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 16,0 d

1. Edition

En

PE 10 P 110 A 920/5 LS 3164 RQV 300-1050 PA 790  
 Komb.-Nr. 0 401 849 722  
 1-10- 9- 4- 3- 6- 5- 8- 7- 2  
 0-27-72-99-144-171-216-243-288-315°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

supersedes -  
 company: KHD  
 engine: BF 10 L 513  
 247 kW/2100 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9  
 (2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1050	11,5+0,1	12,0-12,2	0,4(0,75)			
300	6,4-6,6	1,2- 1,8	0,45(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	1a	4	5	4	7	8	10	11
max.	1070	15,2-17,8	-	-	-	ca. 18	100	min. 7,9	300	1,2-1,4
ca. 55	10,5	1090-1100					300	6,4-6,6	800	5,4-5,6
	4,0	1150-1180					340-460		1050	8,2
	1300	0- 1,0								

Torque control travel a = 0,30 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	control rod travel mm
1050	120,0-122,0 (117,0-125,0)	1090-1100*	-	-	100	135,0-165,0	650 1050 885 760	11,8+0, 11,5+0, 11,5+0, 11,7+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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5.86

Testoil-ISO 4113

G 13

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6 q 4

2. Edition

En

PE 8 P 120 A 320 LS 3807-10 RQ 300/1150 PA 546-6

Komb.-Nr. 0 401 848 770

0 401 848 769

Values only apply to test nozzle-and-holder assembly  
 1 688 901 019 and fuel-injection test tubing 1 680 750 067  
 1-8-7-2-6-3-5-4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 10.85

company: Daimler-Benz

engine: OM 422 A

243,0 kW

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Cyl. 8

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	10,5+0,1	15,3-15,5	0,5 (0,9)			
300	5,0-5,2	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	9,5 4,0 1350	1200-1215 1250-1280 0 - 1,5	300	5,1	100 300 350-390 = 2,0	min. 6,0 5,0-5,2 = 2,0	1150 750	10,5-10,6 10,8-11,0
VH = max. 46 °											

Torque-control travel  
on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1200-1215 min-1

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes/mm	
1	2	3	4	5	6	7	
LDA 1150	0,7 bar 153,0-155,0 (151,0-158,0)		LDA 750	0,7 bar 168,5-170,5 (165,5-173,5) 0 bar 139,0-141,0 (136,0-144,0)	100	140,0-160,0 (136,0-164,0)	

Checking values in brackets

9.86

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# D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 q 4

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel: mm	diminution difference (1)
		Gauge pressure =	bar		
PE 8P..LS 3807-10 +RQ..PA 546-6	0		0,40 0,47		10,3-10,5 10,4-10,5 11,0-11,2

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

40

1. Edition  
En

PE 12 P 120 A 320 LS 3819-14 RQV 350-1150 PA 493-6

1- 5- 9- 8- 3 - 4 - 11 - 10 - 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company: Daimler-Benz

OM 424 LA

engine.

452 kW

Komb.-Nr.

0 401 840 732

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

### A. Fuel Injection Pump Settings

4,0-4,1

Port closing at prestroke

(3,95-4,15)

mm (from BDC)

Cyl.12; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1150	12,1+0,1	18,0-18,2	0,5(0,9)			
350	4,8-5,0	1,6-2,2	0,8(1,2)			
650	=					
500	Sect. C, Col. 4-5		0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	1a	4	5	4	7	8	10	11
max.	1180	15,2-17,8	-	-	-	ca. 12	100	min. 6,2	350	2,2-2,3
ca. 65	11,1 4,0 1350	1190-1200 1235-1265 0 - 1,0	2a	4 5 3a	6		400-600	350 4,5-4,7	510 1150 1200	3,2-3,5 7,5-8,3 9,0

Torque control travel a = - mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	4a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1150 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200*		LDA 650 LDA	0,7 bar 179,0-185,0 (176,0-188,0) 0 bar 131,0-133,0 (128,0-136,0)	100	160,0-180,0 (156,0-184,0)	-	-
	134,0-138,0 (131,0-141,0) **			500					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Set lower delivery at inner lever!

4.86

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## D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b 4 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE12P..LS 3819-14 +RQV..PA 493-6	0,70	0 0,54 0,47	12,1-12,2 10,1-10,3 11,4-11,5 10,6-10,8

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# ① Test Specifications Fuel Injection Pumps ① and Governors

WPP C01/4 MB 21,9 e 3

40

1. Edition

En

PE 12 P 110 A 320 LS 3820-12 RQV 350-1150 PA 378-4  
Komb.-Nr. 0 401 840 731  
1-5 - 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12  
0-15-60-75-120-135-180-195-240-255-300-315 °  
± 0,5 ° (- 0,75 °)

supersedes -  
company: Daimler-Benz  
engine: OM 424  
309 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (4,0-4,1 mm (from BDC)) Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	12,2-12,4	0,4 (0,8)			
350	7,7-7,9	1,4-2,0	0,4 (0,7)			
650	-	Sect. C, Col. 4-5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_.

## B. Governor Settings

Upper rated speed Degree of deflection of control lever ! rev/min 2	Control rod travel mm 3	Intermediate rated speed Degree of deflection of control lever 4 rev/min 5 mm 6				Lower rated speed Degree of deflection of control lever 7 rev/min 8 mm 9				Sliding sleeve travel rev/min 10 mm 11
		1a	2a	4	3a	7	8	9	3a	
max.	1200	15,2-17,8	-	-	-	ca. 20	100	min. 9,0	300	1,7-1,9
ca. 64	10,4 4,0 1300	1170-1180 1235-1265 0 - 1,0				375-485	350	7,4-7,6	580 870 1150	3,6-3,9 5,2-5,6 7,8

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min ③		Fuel delivery characteristics high idle speed ⑤a rev/min ④ cm³/1000 strokes ⑤		Starting fuel delivery Idle switching point rev/min ⑥ cm³/1000 strokes ⑦		Torque-control ⑤ travel Control rod travel rev/min ⑧ mm ⑨	
1	2	3	4	5	6	7	8	9	
1150	122,0-124,0 (119,0-127,0)	1170-1180*	600	96,0-100,0 (93,0-103,0)	100	130,0-140,0 (126,0-144,0)	-	-	
1150	90,0-94,0 (87,0-97,0)	**							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Set lower delivery at inner lever!

4.86

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② **Test Specifications  
Fuel Injection Pumps ②  
and Governors**

**40**

WPP 001/4 MAN 20,9 u

2. Edition

En

PE 12 P 120 A 520/4 LS 3828 RQ 1200 PA 660-1

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°) engine: D 2842 LE

559 kW/2300 min<sup>-1</sup>

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 840 728

MAN-Nr. 2-7686

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings**

Port closing at prestroke (4,15-4,35) mm (from BDC)

Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,9+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings**

Checking of slider PRG check rev/min	Control rod travel mm	Full-load speed regulation						Idle speed regulation						Torque control	
		Setting point rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12	11	12	rev/min	Control rod travel mm
-	-	-	-	10,9 4,0 1400	1195-1210 1285-1315 0-1,0	-	-	-	-	-	-	-	-	1245-1250 min <sup>-1</sup>	1 mm less control rod travel

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1245-1250 min<sup>-1</sup>

1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics			Starting fuel delivery Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm	Control rod travel
1	2	4	5	6	7	6	7	6
1150	200,0-202,0 (197,0-205,0)	-	-	-	-	-	-	-

Checking values in brackets

6.86

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# 1 Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MAN 20,9 t

2. Edition

En

PE 12 P 120 A 520/4 LS 3828      RQV 250-1150 PA 668-7  
 1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12  
 0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)  
 Values only apply to test nozzle-and-holder assembly  
 1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 401 840 725  
 MAN-Nr. 2-7590

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testo 100 ISO 4101

**A. Fuel Injection Pump Settings**

Port closing at prestroke      4,2 - 4,3  
 (4,15-4,35)      mm (from BDC)      Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1150	11,9+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		1
Degree of deflection of control lever	rev/min	Control rod travel mm	1a	Degree of deflection of control lever	rev/min	Control rod travel mm	4	Degree of deflection of control lever	rev/min	Control rod travel mm	1
1	2	3	2a	4	5	6	4	7	8	9	3
max.	1150	15,2-17,8		-	--	-		ca. 12	100	min. 8,5	350
ca. 66	10,9 4,0 1450	1190-1200 1320-1350 0-1,0							250 400-460=2,0	6,9-7,1	900 1150
							3a				2,0-2,5 6,7-6,9 8,6

Torque control travel a = - mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min
1	2	3	4	6	8
1150	200,0-202,0 (197,0-205,0)	1190-1200*	-	100	190,0-210,0 (186,0-214,0)

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.00

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②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 20,9 s

2. Edition

En

PE 12 P 120 A 520/4 LS 3828 RQ 250/1150 PA 739 supersedes 9.85  
 1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12 company MAN  
 0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°) engine D 2842 LE  
 Values only apply to test nozzle-and-holder assembly 529 kW/2300 min<sup>-1</sup>  
 1 688 901 019 and fuel-injection test tubing 1 680 750 067 MAN-Nr. 2-7593  
 Komb.-Nr. 0 401 840 724

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke		4,2 - 4,3 (4,15-4,35)		mm (from BDC)	Cyl. 12	
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1150	11,4+0,1	19,5-19,7	0,5 (0,9)			
250	6,9-7,1	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control		
Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	550	19,2-20,8	550	20,0	10,4 4,0	1220-1235 1415-1445	250	7,0	100 250 315-355=2,0	min.8,5 6,9-7,1	1150 750	11,4-11,5 11,4-11,6
VH = max. 46°												

Torque-control travel on flyweight assembly dimension a =  mm Speed regulation: At 1220-1235 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm	
1	LDA 1150	1,0 bar 195,0-197,0 (192,0-200,0)	-	LDA 750 500	1,0 bar 200,0-206,0 (197,0-209,0) 0 bar 119,0-121,0 (116,0-124,0)	100 250	190,0-210,0 (186,0-214,0) 17,0-23,0 (14,0-26,0)

Checking values in brackets

6.86

# D. Adjustment Test for Manifold Pressure Compensator

MAN 20,9 s

~ 2 ~

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel-diminution difference	
					mm	(1)
PE 12 P..LS 3828 + RQ..PA 739	1,0		0		11,4-11,5	
			0,30		8,9-9,0	
			0,52		9,2-9,3	
					10,7-11,0	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 SCA 14,2 e

2. Edition

En

PE 8 P 120 A 920/4 LS 7002-1 RSV 350-1050 P 1/504

1-2-7-3-4-5-6-8 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ ) See page 2!

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 1.84  
company Saab-Scania  
engine DS 14 42

Komb.-Nr. 0 402 678 801

## A. Fuel Injection Pump Settings

5,0-5,1

Port closing at prestroke

(4,95-5,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
700	13,2+0,1	18,7-18,9	0,6(0,9)			
350	4,4-4,6	1,4-1,8	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0 $x = 6,0$	-	-	-	ca.30	350	4,0	-	-
ca. 64 (2a)	12,2 4,0 1250	1090-1100 1160-1190 0,3-1,7					350 440-500 = 2,0	4,4-4,6		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note changed to ) rev/min	(3a) Fuel delivery characteristics		Starting fuel delivery idle	(5)	(4a) Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	cm³/1000 strokes	6	7	8
700	187,0-189,0 (184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)	100	240,0-290,0 =20,0-21,0 mm RW	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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10.84

S U P P L E M E N T A R Y   I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 5.10.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

En

# (2) Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 MB 14,7 a 2  
1. Edition

En

PE 8 P 120 A 320 LS 7801      RQ 300/1050 PA 762  
Komb.-Nr. 0 402 648 817  
1-8-7-2-6-3-5-4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )  
Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes  
company Daimler-Benz  
engine OM 442 a  
260 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke      5, 2-5, 3  
(5, 15-5, 35)      mm (from BDC)      Cy1.8; RW = 20,0-21,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	13,6+0,2	19,2-19,4	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
700	-	C, Sp. 4 u. 5	0,8(1,2)			
500	-					
850	-					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min		Full-load speed regulation Setting point Control rod travel rev/min				Idle speed regulation Setting point Control rod travel rev/min				Torque control Control rod travel rev/min	
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	11,9	1095-1110	300	5,9	100	min. 7,5	1050	12,8-13,0
VH = max. 46°				4,0	1170-1200			300	5,8-6,0	850	13,7-13,9
				1300	0-1,5			365-405	= 2,0	700	14,0-14,3

Torque-control travel  
on flyweight assembly dimension a = 0,65 mm

Speed regulation: At  $1095-1110 \text{ min}^{-1}$

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop rev/min		Fuel delivery characteristics rev/min			Starting fuel delivery idle speed	
1	2	3	4	5	6	7	Control rod travel	
LDA	0,65 bar	-	LDA	1,05 bar	100	175,0-190,0		
600	192,0-194,0		700	205,0-209,0		(171,0-194,0)		
	(189,0-197,0)			(202,0-212,0)				
LDA	1,05 bar		LDA	0 bar				
1050	179,0-182,0		500	145,0-147,0				
	(176,0-185,0)			(142,0-150,0)				
850	201,0-205,0							
	(198,0-208,0)							

Checking values in brackets

6.86

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H1

## D. Adjustment Test for Manifold Pressure Compensator

MB 14,7 a 2

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting Gauge pressure =	Measurement Gauge pressure =	Control rod travel mm (1)	diminution difference
PE 8 P..LS 7801 + RQ..PA 762	0,65	0,30 0,40 0,85	13,6-13,8 11,9-12,1 12,9-13,2 13,7-13,8	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 21,9 h

1. Edition

En

PE 12 P 120 A 320 LS 7805-1 RSV 350-750 POA 825  
 1-5-9-8-3-4-11-10-2-6-7-12  
 0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)  
 Values only apply to test nozzle-and-holder assembly  
 1 688 901 019 and fuel-injection test tubing 1 680 750 067  
 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes  
 company Daimler-Benz  
 engine OM 444 LA  
 Komb.-Nr. 0 402 670 800

## A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3  
 (5,15-5,35) mm (from BDC) Cyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
700	14,1+0,1	21,0-21,2	0,5 (0,9)			
350	5,4-5,6	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

1	Upper rated speed rev/min			Intermediate rated speed			4	Lower rated speed			3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm	rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,4	-	-	-	-	ca. 13	350	5,5	-	-	-	-
	X = 1,75							100	min. 19,5				
ca. 25	13,1	750-755						350	5,4-5,6	**			
(2a)	4,0	780-790											
	1000	0,3-1,7											

The numbers denote the sequence of the tests. Set idle-speed auxiliary spring at 2 mm control-rod travel,

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full load stop		6	Rotational-speed limitat.		3a	Fuel delivery characteristics		Starting fuel delivery	5	4a	Idle stop	
	Test oil temp 40°C (104°F)	rev/min	Note changed to )	rev/min	3	rev/min	cm³/1000 strokes	Idle	rev/min	7	rev/min	cm³/1000 strokes	Control rod travel mm
		1	2		3	4	5	6	7	8	9		
700	210,0-212,0 (207,0-215,0)		750-755*		650	197,0-213,0 (194,0-216,0)		100	210,0-230,0 - (206,0-234,0)				-

Checking values in brackets

\* 1 mm less control rod travel than col 2

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7.86

# Test specifications Fuel injection pumps and governors

40

WPP 001/4 MTU 37,4 b

13. Edition

En.

PE 10 ZWM 140/120 RS 38/11 RQU 425/1100 ZW 30 DR  
 Komb.-Nr. 0 406 039 109  
 Governor adjustment according to VDT-I-420/112

Replaces 11.83  
 Firm: MTU  
 Engine: MB 838 Ca M

1- 2- 9- 10- 3 - 4 - 5 - 6 - 7 - 8  
 0-45-72-117-144-189-216-261-288-333° ± 0,5° (± 0,75°)  
 Note VDT-W-Allg./7 !

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

2,0-2,1

Port closing at prestroke (1,95-2,15) mm (from BDC)

Cyl. 10

Rotational speed min⁻¹	Control-rod travel mm	Fuel delivery Average value cm³/1000 strokes	Difference in fuel delivery cm³/1000 strokes	Fuel delivery Checking values cm³/1000 strokes	Spring pre-tension (torque-control valve)
1	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	9,0 (14,0)		
900/550	-	C, Sp. 5	11,0 (16,0)		

Adjust the fuel delivery from each outlet according to the values in

## B. Governor settings

Upper rated speed Control lever deflection degrees	Control-rod travel mm		Medium rated speed Control lever deflection degrees		Lower rated speed Control lever deflection degrees		Torque control Control-rod travel mm				
	1	2	3	4	5	6	7	8	9	10	11
max.	600	18,0-18,5		Sliding-block position		ca. 27	600	0,5-1,8	700	17,6-18,0	
ca. 58	1080	13,2						150	16,5-18,0	900	16,8-17,2
	12,2	1135-1145						350	9,0-12,5	1050	16,5-16,7
	5,0	1205-1235						425	5,3-5,8		
	0	1250-1295					1100	0,2-1,4	500	1,5-3,5	
							1140-1170	0	800	0,6-1,2	

Torque control travel a = 0,35 mm ± 0,03

Speed regulation: At 1130 min⁻¹ 1mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)	Control rod stop at speed min⁻¹		Fuel-delivery characteristics		Starting fuel delivery		
	1	2	3	4	5	6	
1080	316,0-320,0 (313,0-323,0)		-	900	305,0-313,0 (301,0-317,0)	100	18,0-18,2 mm RW
				550	271,0-279,0 (267,0-283,0)	425	51,0-57,0
						High idle speed	
						1220	RW 3,0-3,1 mm 85,0-105,0

Checking values in brackets

Shutoff solenoid 0,5-1,5 mm in front of stop.

05.85

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# Test Specifications

## Distributor-type Fuel-injection Pumps

En

VE 6/12 F 1100 R 225-9      Overflow temperature 45° C  
 0 460 426 075  
 DHK: 1 688 901 027; 250 + 3 bar

supersedes  
 company CDC  
 engine: 6 BT-5.9  
 124 PS / 2200 min<sup>-1</sup>

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Test Instructions and Test Equipment  
 see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	3,3-3,7	mm	
1.2 Supply-pump pressure	750	4,0-4,6	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery with charge-air pressure	-		cm <sup>3</sup> /1000 strokes	
Full-load delivery without charge-air pressure	750	59,5-60,5	cm <sup>3</sup> /1000 strokes	4,0
1.4 Idle regulation	375	8,0-14,0	cm <sup>3</sup> /1000 strokes	5,5
1.5 Full-speed regulation	1150	39,0-45,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	100	min. 70,0	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent port-closing	-			

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device	n = rev/min mm	500 1,4-2,2(1,1-2,5)	750 (2,8-4,2)	1100 6,0-6,8(5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	500 2,9-3,5		1100 6,0-6,8
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 41-83(26-98)		1100 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	1250 2000 1170 1150 1100 900 750 500	max. 2,0 max. 15 min. 15 (37,0-47,0) (54,5-60,5) (57,5-63,5) (57,0-63,0) (54,5-62,5) (54,8-62,2)		K KF MS SVS	- 5,1-5,4 1,3-1,55 2,6
switch-off				A XK B XL	18,8-20,8 12,1-15,5
Idle stop	350 375 500	17,0-26,0 (16,5-26,5) (6,0-16,0) max. 4,0			
End stop	130 300	min. 70,0 max. 70,0			
2.4 Solenoid		cut-in voltage		Observations	
				Shutoff check ELAB at 375 min <sup>-1</sup> 24 V pulling electro-magnet. Start-of-delivery blocking outlet "D" Stroke 1.5 mm	

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⑥ **Test Specifications**  
**Distributor-type**  
**Fuel-injection Pumps**

**46**

WPP 001/4 CUM 5,9 t

1. Edition

VE 6/12 F 1000 R 225-12      Overflow temperature 45°C  
 0 460 426 081  
 DHK: 1 688 901 027; 250 + 3 bar

supersedes  
 company: **CDC**  
 engine: **6 BT-5.9 Case**  
**89 PS / 2000 min<sup>-1</sup>**

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting      0,3      mm      ± 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	3,3-3,7	mm	
1.2 Supply-pump pressure	750	3,5-4,1	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery with charge-air pressure	-		cm <sup>3</sup> /1000 strokes	
Full-load delivery without charge-air pressure	900	47,5-48,5	cm <sup>3</sup> /1000 strokes	4,0
1.4 Idle regulation	375	8,0-14,0	cm <sup>3</sup> /1000 strokes	5,5
1.5 Full-speed regulation	1050	30,0-36,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	100	min. 40,0	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent port-closing	-			

**2. Test Specifications**      checking values in brackets ( )

2.1 Timing device	n = rev/min mm	500 1,1-1,9(0,8-2,2)	750 (2,8-4,2)	1000 5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	200 0,8-1,4	500 2,4-3,0	1000 4,5-5,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 41-83(26-98)		1000 55-138(40-153)

2.3 Fuel deliveries	Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop		1100 1090 1060 1050 1000 900 750 500	max. 2,0 max. 15,0 min. 15,0 (28,0-38,0) (43,0-49,0) (45,0-51,0) (44,0-50,0) (33,3-40,7)		K KF MS SVS	- 5,1-5,4 0,9-1,15 1,2
	switch-off				A XK B XL	18,8-20,8 9,1-12,5
Idle stop		375 450		(6,0-16,0)		
End stop		200 370	max. 4,0 min. 45,0 max. 50,0			
2.4 Solenoid			— cut-in voltage		Observations	
					Shutoff check ELAB at 375 min <sup>-1</sup> 24 V pulling electro-magnet. Start-of-delivery blocking outlet "D" Stroke 1.5 mm	

**Testoil-ISO 4113**

H6

**BOSCH**

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11.86

# Test Specifications

## Distributor-type Fuel-injection Pumps

VE 6/12 F 1100 R 225-13      Overflow temperature 45° C  
 0 460 426 082  
 DHK: 1 688 901 027; 250 + 3 bar

supersedes  
 company CDC  
 engine: 6 BT-5.9  
 142 PS bei / min<sup>-1</sup>

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Test Instructions and Test Equipment  
 see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	3,4-3,8 mm		
1.2 Supply-pump pressure	750	3,5-4,1 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery with charge-air pressure	-	cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge-air pressure	900	71,5-72,5 cm <sup>3</sup> /1000 strokes		4,0
1.4 Idle regulation	375	8,0-14,0 cm <sup>3</sup> /1000 strokes		5,5
1.5 Full-speed regulation	1140	53,0-59,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 60,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-			

### 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device	n = rev/min mm	500 1,5-2,3(1,2-2,6)	750 (2,9-4,3)	1100 5,2-6,0(4,9-6,3)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	500 2,4-3,0		1100 4,8-5,4
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 41-83(26-98)		1100 55-138(40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	Dimensions for assembly and adjustment mm
End stop	1220 1200 1180 1140 1100 900 750 500	max. 3,0 max. 15,0 min. 15,0 (51,0-61,0) 66,5-69,5 (65,0-71,0) (69,0-75,0) 70,5-74,5 (69,5-75,5) 53,0-61,0 (53,3-60,7)		K KF MS SVS	- 5,1-5,4 0,9-1,15 1,4
switch-off				A XK B XL	20,2-22,2 10,5-13,9
Idle stop	350 375 450	20,0-28,0 (19,0-29,0) max. 4,0			
End stop	130 240	min. 60 max. 60			
24 Solenoid	—	cut-in voltage		Observations	
				Shutoff check ELAB at 375 min <sup>-1</sup> 24 V pushing electromagnet. Start-of-delivery blocking outlet "D" Stroke 1.5 mm	

Testoil-ISO 4113

# Test Specifications

## Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9e  
1. Edition

En

VE 4/12 F 1400 R 230  
0 460 424 026  
DHK: 1 688 901 027; 250 + 3 bar

Overflow temperature 45° C

supersedes CDC  
company: 4BT-3,9  
engine: 107 PS / 2800 min<sup>-1</sup>

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers  
Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Test Instructions and Test Equipment  
see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	1,8- 2,2 mm	1,0	
1.2 Supply-pump pressure	1100	4,7- 5,3 bar (kgf/cm <sup>2</sup> )	1,0	
1.3 Full-load delivery with charge-air pressure	900	69,5-70,5 cm <sup>3</sup> /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	36,5-37,5 cm <sup>3</sup> /1000 strokes	0	
1.4 Idle regulation	375	8,0-14,0 cm <sup>3</sup> /1000 strokes	0	5,5
1.5 Full-speed regulation	1500	44,0-50,0 cm <sup>3</sup> /1000 strokes	1,0	
1.6 Start	100	min. 40,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-			

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device LDA=1,0 bar	n = rev/min mm	900 0,3-1,1 (0-1,4)	1100 (1,3-2,7)	1250 2,6-3,4 (2,3-3,7)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 2,1-2,7		1400 5,9-6,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 41-83 (26-98)		1400 (1,0 bar) 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	1650	max. 2,0	1,0	K	-
	1620	max. 15,0	1,0	KF	5,1-5,4
	1590	min. 15,	1,0	MS	0,9-1,15
	1500	(42,0-52,0)	1,0	SVS	3,8
	1400	64,5-67,5(63,0-69,0)	1,0		
	1100	66,5-69,5(65,0-71,0)	1,0		
	900	(67,0-73,0)	1,0		
	700 *	67,0-68,0(64,5-70,5)	0,4		
	500	73,5-81,5(73,8-81,2)	1,0		
switch-off		(34,0-40,0)	0	A XK	18,8-20,8
				B XL	9,8-13,2

Idle stop	375 600	( 6,0-16,0) max. 4,0
End stop	150 380	min. 40,0 max. 40,0

2.4 Solenoid	cut-in voltage ... min. 10 Volt rated voltage 12 V.
--------------	---

Observations  
Shutoff check ELAB at 375 min<sup>-1</sup>  
\*LDA-stroke 6,0 mm  
Start-of-delivery blocking outlet "D"  
Stroke 1,66 mm

# Test Specifications

## Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9d  
1. Edition

En

VE 4/12 F 1250 R 230-1    Overflow temperature 45° C  
0 460 424 027  
DHK: 1 688 901 027; 250 + 3 bar

supersedes  
company: CDC  
engine: 4BT-3.9  
107 PS / 2500 min<sup>-1</sup>

**Testoil-ISO 4113**

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers  
Pre-stroke setting    0,3 mm ± 0,02 (0,04)

Test Instructions and Test Equipment  
see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	1,8- 2,2 mm	1,0	
1.2 Supply-pump pressure	1100	4,7- 5,3 bar (kgf/cm <sup>2</sup> )	1,0	
1.3 Full-load delivery with charge-air pressure	900	69,5-70,5 cm <sup>3</sup> /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	36,5-37,5 cm <sup>3</sup> /1000 strokes	0	
1.4 Idle regulation	340	8,0-14,0 cm <sup>3</sup> /1000 strokes	0	5,5
1.5 Full-speed regulation	1330	49,0-55,0 cm <sup>3</sup> /1000 strokes	1,0	
1.6 Start	100	min. 40,0 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications		Checking values in brackets ( )		
2.1 Timing device LDA=1,0 bar	n = rev/min mm	900 0,3-1,1 (0-1,4)	1100 (1,3-2,7)	1200 2,4-3,2 (2,1-3,5)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 2,1-2,7	1250 5,4-6,0	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 41-83 (26-98)		1250 (1,0 bar) 55-138 (40-153)
2.3 Fuel deliveries			3. Dimensions for assembly and adjustment mm	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation
End stop	1500 1480 1430 1330 1250 1100 900 700 * 500	max. 2,0 max. 15,0 min. 15,0 (47,0-57,0) 65,5-68,5 (64,0-70,0) 66,5-69,5 (65,0-71,0) (67,0-73,0) 67,0-68,0 (64,5-70,5) 73,5-81,5 (78,8-81,2)	1,0 1,0 1,0 1,0 1,0 1,0 1,0 0,4 1,0	K KF MS SVS
switch-off	500	(34,0-40,0)	0	A XK B XL
Idle stop	340 500	( 6,0-16,0)		Observations Shutoff check ELAB at 340 min <sup>-1</sup>
End stop	150 380	max. 4,0 min. 40 max. 40		*LDA-stroke 6,7 mm Start-of-delivery blocking outlet "A" Stroke 1,66 mm
2.4 Solenoid	cut-in voltage rated voltage	min. 10 Volt 12 V.		

# ⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 CUM 3,9c  
1. Edition

Testoil-ISO 4113

VE 4/12 F 1150 R 231-1  
0 460 424 029  
DHK: 1 688 901 027; 250 + 3 bar

En

supersedes CDC  
company: 4BTA-3.9  
engine: 114 PS / 2300 min<sup>-1</sup>

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting 0,3 mm  $\pm 0,02$  (0,04)

Test Instructions and Test Equipment  
see VDT-W-460/1

1. Settings		Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		850	4,0-4,4	1,0	
1.2 Supply-pump pressure		850	5,6-6,2	1,0	
1.3 Full-load delivery with charge-air pressure		850	85,5-86,5	1,0	4,0
Full-load delivery without charge-air pressure		500	63,5-64,5	0	
1.4 Idle regulation		375	8,0-14,0	0	5,5
1.5 Full-speed regulation		1220	62,5-68,5	1,0	
1.6 Start		100	min. 60,0	0	
1.7 Load-dependent port-closing		-			

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device LDA=1,0 bar	n = rev/min mm	500 1,8-2,6 (1,5-2,9)	1100 (3,5-4,9)	1200 5,2-6,0 (4,9-6,3)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 4,0-4,6		1150 6,9-7,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 41-83 (26-98)		1150 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	Dimensions for assembly and adjustment mm
End stop	1320	max. 2,0	1,0	K KF MS SVS	-
	1300	max. 15,0	1,0		
	1260	min. 15,0	1,0		
	1220	(60,5-70,5)	1,0		
	1150	76,0-79,0 (74,5-80,5)	1,0		
	1000	79,5-82,5 (78,0-84,0)	1,0		
	850	(83,0-89,0)	1,0		
	700 *	79,5-80,5 (77,0-83,0)	0,35		
	500	90,0-98,0 (90,3-97,7)	1,0		
	500	{ 61,0-67,0 }	0		
switch-off				A XK	18,8-20,8
				B XL	12,4-15,8
End stop	350	24,0-32,0 (23,0-33,0)		Observations Shutoff check ELAB at 375 min <sup>-1</sup> *LDA-stroke 6,6 mm Start-of-delivery blocking outlet "A" Stroke 1,55 mm	
	375	( 6,0-16,0 )			
	450	max. 4,0			
	130	min. 60			
	230	max. 60			
2.4 Solenoid	cut-in voltage	min. 10 Volt			
	rated voltage	12 V.			

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

WPP 001/4 CUM 5,9t3  
1. Edition

En

VE 6/12 F 1400 R 232  
0 460 426 077  
DHK: 1 688 901 027; 250 + 3 bar

supersedes -  
company: CDC  
engine: 6BT-5.9  
163 PS / 2800 min<sup>-1</sup>

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,2-4,6 mm	1,0	
1.2 Supply-pump pressure	900	4,1-4,7 bar (kgf/cm <sup>2</sup> )	1,0	
1.3 Full-load delivery with charge-air pressure	900	67,0-68,0 cm <sup>3</sup> /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	30,5-31,5 cm <sup>3</sup> /1000 strokes	0	
1.4 Idle regulation	375	8,0-14,0 cm <sup>3</sup> /1000 strokes	0	5,5
1.5 Full-speed regulation	1500	49,0-55,0 cm <sup>3</sup> /1000 strokes	1,0	
1.6 Start	100	min. 45 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-			

### 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device LDA=1,0 bar	n = rev/min mm	500 0,4-1,2 (0,1-1,5)	900 (3,7-5,1)	1100 5,5-6,3 (5,2-6,6)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 2,4-3,0		1400 6,1-6,7
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 41-83 (26-98)		1400 (0 bar) 55-138 (40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	1650	max. 3,0	1,0	K	-
	1620	max. 15,0	1,0	KF	5,1-5,4
	1590	min. 15,0	1,0	MS	1,2-1,45
	1500	(47,0-57,0)	1,0	SVS	
	1400	61,5-64,5 (60,0-66,0)	1,0		
	1100	64,5-67,5 (63,0-69,0)	1,0		
	900	(64,5-70,5)	1,0		
	700 *	59,0-60,0 (56,5-52,5)	0,5		
switch-off	500	65,5-73,5 (65,8-73,2)	1,0	A XL	20,2-22,2
		(28,0-34,0)	0	B XL	10,2-13,6
Idle stop	350	18,0-30,0 (19,0-29,0)		Observations	
	375	(6,0-16,0)		Shutoff check ELAB at 375 min <sup>-1</sup>	
	450	max. 4,0		*LDA-stroke 6,7 mm	
End stop	300	min. 55		Start-of-delivery blocking outlet "D"	
	480	max. 55		Stroke 1,1 mm	
2.4 Solenoid	cut-in voltage	min. 10 Volt			
		rated voltage 12 V.			

# Test Specifications Distributor-type Fuel-injection Pumps

En

VE 6/12 F 1250 R 232-1      Overflow temperature 45° C  
 0 460 426 078  
 DHK: 1 688 901 027; 250 + 3 bar

supersedes  
 company CDC  
 engine: 6 BT-5.9  
 163 PS / 2500 min<sup>-1</sup>

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment  
 see VDT-W-460/..

Pre-stroke setting    0,3      mm     $\pm$  0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,9-4,3	mm	1,0
1.2 Supply-pump pressure	900	3,7-4,3	bar (kgf/cm <sup>2</sup> )	1,0
1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure	900      500	66,0-67,0      30,5-31,5	cm <sup>3</sup> /1000 strokes      cm <sup>3</sup> /1000 strokes	1,0      0
1.4 Idle regulation	360	8,0-14,0	cm <sup>3</sup> /1000 strokes	0
1.5 Full-speed regulation	1330	50,5-56,5	cm <sup>3</sup> /1000 strokes	5,5
1.6 Start	100	min. 45	cm <sup>3</sup> /1000 strokes	1,0
1.7 Load-dependent port-closing	-			

## 2. Test Specifications

Checking values in brackets ( )

2.1 Timing device LDA = 1,0 bar	n = rev/min mm	700 1,6-2,4(1,3-2,7)	900 (3,4-4,8)	1100 5,3-6,1(5,0-6,4)
2.2 Supply pump LDA = 1,0 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	350 1,2-1,8	700 2,8-3,4	1100 4,5-5,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 46-83 (26-98)		1250 (1,0 bar) 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	1550 1470 1430 1330 1250 1100 900 700* 500	max. 2,0 max. 15,0 min. 15,0 (48,5-58,5) 63,5-66,5 (62,0-68,0) 64,0-67,0 (62,5-68,5) (63,5-69,5) 60,0-61,0 (57,5-63,5) 61,5-75,5 (67,8-75,2)	1,0 1,0 1,0 1,0 1,0 1,0 1,0 0,5 1,0	K KF MS SVS	- 5,1-5,4 1,2-1,45 0,6
switch-off	500	(28,0-34,0)	0	A XK B XL	20,2-22,2 9,0-12,4
Idle stop	360 340	(6,0-16,0)			
End stop	300 480	max. 4,0 min. 55 max. 55			
2.4 Solenoid	cut-in voltage	min. 10 Volt rated voltage 12 V.			

Observations  
 Shutoff check ELAB at  
 360 min<sup>-1</sup>  
 \*LVA-stroke 7,0 mm  
 Start-of-delivery  
 blocking outlet "D"  
 Stroke 1,1 mm

**Testoil-ISO 4113**

**BOSCH**

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# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31.7 g 2

1. Edition

En.

PE 8 ZWM 160 / 100 RS 2001-2  
Komb.-Nr. 0 406 008 024

8-1 -2 - 6 - 3 - 4 - 5 - 7  
0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)

Replaces -

Firm: MTU

Engine: 8 V 396-03  
960 kW

See page 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

**A. Fuel-injection-pump settings**

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) cyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in **B. Governor settings**

Upper rated speed Control lever deflection degrees 1		Control-rod travel mm min⁻¹ 2		Medium rated speed Control lever deflection degrees 4		Control-rod travel mm min⁻¹ 5		Lower rated speed Control lever deflection degrees 7		Control-rod travel mm min⁻¹ 8		Torque control Control-rod travel mm min⁻¹ 10	Control-rod travel mm min⁻¹ 11
-	-	-	-	-	-	-	-	-	-	-	-	-	

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

**C. Settings for fuel-injection pump with fitted governor**

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1		Control rod stop at speed min⁻¹ 3		Fuel-delivery characteristics min⁻¹ 4		Starting fuel delivery min⁻¹ 6	
	cm³/1000 strokes 2		cm³/1000 strokes 5		cm³/1000 strokes 7		cm³/1000 strokes 8
Adjust according to the engine records.		-	-	-	-	-	-

Checking values in brackets

7.86

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 by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany  
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Note:

Fuel-injection pump has special control rod for partial cutoff of particular cylinders.

"0" control-rod travel corresponds to 1.0 mm clearance of the control-rod canister from the stop plate at the end face.

# Test specifications Fuel injection pumps and governors

En.

WPP 001/4 MTU 31,7 h1

1. Edition

PE 8 ZWM 160/100 RS 2006  
Komb.-Nr. 0 406 008 025

Replaces -

Firm: MTU

8- 1- 2- 6 - 3 - 4 - 5 - 7  
0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)

Engine: 8 V 396-03  
960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

2,5-2,6  
Port closing at prestroke (2,45-2,65) mm (from BDC) cyl. 8

Rotational speed min⁻¹	Control-rod travel mm	Fuel delivery Average value cm³/1000 strokes	Difference in fuel delivery cm³/1000 strokes	Fuel delivery Checking values cm³/1000 strokes	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	-
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-135	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor settings

Upper rated speed Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	Medium rated speed Control lever deflection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control Control-rod travel mm 10	Control-rod travel mm 11
-	-	-	-	-	-	-	-	-	-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
Adjust according to the engine records.					

Checking values in brackets

Note:

"0" control-rod travel corresponds to 1.0 mm clearance of  
the control-rod canister from the stop plate at the end face.

En

# Test Specifications Fuel Injection Pumps ①A and Governors

40  
VDT-WPP 001/4 IHC 13,4 a  
1. Edition

En

PES 6 P 110/420/3 LS120	EP/RSV 300-800	P2/319D,337D
	300-1050	P2/320D,322D,327D,324,331
	300-1100	P2/321
Test details see page 4!	300- 950	P2/323D,328D
	... - ...	P0/...

supersedes I H C  
company engine DTJ 817 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	8	6,9 - 7,3	0,4			
600	6	2,5 - 3,7				
600	12	13,7 - 15,0				
600	15	19,4 - 20,7				
200	6	4,7 - 5,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
see page 2											
2a											

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp. 40 °C (104 °F)	6	Rotational-speed limitat Note changed to 1 rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	4	5	6	7	8	9
1	2	3	4						
see page 3									

Checking values in brackets

\* 1 mm less control rod travel than col 2

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-800 P 2/319 Dr. .. P 0/319 Dr, .. P 0/337 DR

ca.35,5	800	16,0				ca.18	300	5,5	780	0
	860	11,7	*				150	20 - 21		
	920	5,8					300	5,2-5,8	650	0,3-0,5
	880	8,0-11,0					450	1,3-3,3		
	950	3,1- 5,2	**				600	0 - 2	400	0,8-1,0
	1070	0 - 2								

300-1050 P2/320 Dr, .. P 0/320 DR

ca.43	1050	16,0				ca.20	300	6,0		
	1120	10,6	*				150	20 - 21	1030	0
	1170	6,0					300	5,7-6,3	800	0,2-0,4
	1130	8,4-10,8					450	3,1-4,5		
	1200	3,7- 6,5	**				640	0	400	0,2-0,4
	1340	0 - 2								

300-1100 P 2/321, ..P 0/321 R

ca.44	1100	16,0				ca.19	300	6,0		
	1160	11,4	*				150	20 - 21	-	-
	1210	6,7					300	5,7-6,3	Ajust on	
	1180	8,4-10,9					450	2,9-4,4	engine as	
	1250	3,8-5,6	**				630	0 - 2	required	
	1380	0 - 2								

300-1050 P 2/322 Dr, ..P 2/327DR, .. P 0/..

ca.43	1050	16,0				ca.20	300	6,0		
	1120	10,6	*				150	20 - 21	1030	0
	1170	6,0					300	5,7-6,3	800	0,3-0,5
	1130	8,4-10,6					450	3,0-4,5		
	1200	3,6-5,4	**				630	0 - 2	400	0,4-0,6
	1340	0 - 2								

300 - 950 P 2/323 Dr, ..P 2/328 Dr, ..P 0/..

ca. 40	950	16,0				ca.20	300	6,0		
	1020	10,6	*				150	20 - 21	930	0
	1060	6,9					300	5,7-6,3	600	0,1-0,3
	1020	9,5-11,6					450	2,9-4,4		
	1150	1,8- 4,2	**				630	0 - 2	400	0,1-0,3
	1250	0 - 2								

300-1050 P 2/324 R, ..P 0/.. ..P 2/331 R

ca.43	1050	16,0				ca.20	300	6,0		
	1120	10,8	*				150	20 - 21	-	-
	1160	7,0					300	5,7-6,3		
	1130	8,2-10,8					450	3,0-4,4		
	1200	4,0- 5,6	**				630	0 - 1		
	1340	0 - 2								

\* without auxiliary spring

\*\* with auxiliary spring

Testoil-ISO 4113

### C. Settings for Fuel Injection Pump with Fitted Governor

IHC 13,4 a

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Governor	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
780	140 - 142	800: 0,1-0,3	500	165 - 169	100	mind. 20	..P2/319 DR	

\*

1030	156 - 158	1050:0,1-0,3	500	213 - 217	100	mind. 18,5	..P2/320 DR
	*		500	107 - 111			..P0/320 DR

1080	180 - 182	1100:0,1-0,3	500	138 - 142	100	mind. 18,5	..P2/321 R
	*						..P0/321 R

1030	128 - 130	1050:0,1-0,3	500	174 - 178	100	mind. 20	..P2/322 DR
	*						..P0/322 DR

930	138 - 140	950:0,1-0,3	500	189 - 193	100	mind. 20	..P2/323 DR
	*						..P0/323 DR

1030	105 - 107	1050:0,1-0,3			100	mind. 20	..P2/324 DR
	*						..P0/324 DR

1030	135 - 137	1050:0,1-0,3	500	176 - 180	100	mind. 20	..P2/327 DR
	*						..P0/327 DR

930	139 - 141	950:0,1-0,3	500	189 - 193	100	mind. 18,5	..P2/328 DR
	*		500	140 - 144			..P0/328 DR

1030	158 - 160	1050:0,1-0,3	500	110 - 114	100	mind. 18,5	..P2/331 R
	*						

When checking (column 3 and 5) increase by 1 cm<sup>3</sup>!

-3-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test with nozzle 0 681 443 014 - EFEP 182 or complete nozzle-holder assembly 0 681 343 009 - EF 8511/9a and overflow valve 1 417 413 025 - EPVE 176 P 2 Z, supply pressure 1.5 kp/cm<sup>2</sup> (flushing).

Refer to BMP 115/9 for connection parts and modified port-closing measuring device.

1. Set start of delivery on prestroke.  
(Conversion of device 1 688 130 085 - EFEP 388 A and plug on drive end)

On outlet 1 start of delivery, check timing pin at SP-flange to see whether pressing in the pin causes it to engage in the camshaft. Move and secure flange if necessary.

2. Set fuel delivery - section A of test-specification sheet - (refer to BMP for connection parts)
3. Test governor - Section B - without manifold-pressure compensator
4. Set full-load delivery - Section C, Column 1-2 - when equipped with manifold-pressure compensator, set larger full-load delivery with manifold-pressure compensator removed.
  - 4.1 Correct fuel-delivery characteristics - Column 4-5 with torque-control retainer.  
Check whether full-load delivery unchanged.
  - 4.2 Rotational-speed limitation - Column 3 - at upper rated speed, control-rod travel must be 0.1 - 0.3 mm less than with full-load delivery as per Column 1-2.
  - 4.3 Pre-adjust removed manifold-pressure compensator:  
Unscrew stop screw in diaphragm housing.  
Start of adjustment 0.1 kp/cm<sup>2</sup>, end of adjustment 0.4 kp/cm<sup>2</sup>; adjust if necessary by way of washers beneath diaphragm spring.  
  
Set manifold pressure 0.7 kp/cm<sup>2</sup>. Use depth gauge to measure immersion depth of stop pin in manifold-pressure compensator without seal: Set immersion depth of 15.7 ± 0.1 mm at screw and lock nut and secure with tab washer.  
  
Limit travel of stop pin between 0 and 0.5 kp/cm<sup>2</sup> = approx. 4.1 mm at stop screw of diaphragm housing.  
Make sure all parts move freely when carrying out adjustment!
- 4.4 Attach manifold-pressure compensator.  
With stop screw in diaphragm housing set smaller full-load delivery as per Column 4-5 (= Fuel delivery on induction)
5. Check starting control-rod travel as per Column 6-7 (without manifold pressure).

# Test Specifications Fuel Injection Pumps and Governors

1A

40 VDT-WPP 001/4 IHC 13,4 b

2. Edition

En

PES 6 P 110/420/3 LS 137 EP/RSV 300-1100 PO/332D,335,364,380 supersedes 12.70  
 300-1050 PO/333D,334,350, company I H C  
 334D, 350D, 360D, 363D  
 Test details see page 4! - 300- 950 PO/336D  
 300- 800 PO/337D engine DTJ 817 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	8	9,8 - 10,4	0,5			
600	6	5,0 - 6,2				
600	12	17,7 - 19,4				
600	15	23,9 - 26,1				
200	6	5,4 - 6,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min
1	2	3	4	5	6	7	8	9	10	11	
see page 2											
2a											

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp. 40°C (104°F)		6	Rotational-speed limit Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	rev/min	cm³/1000 strokes	6	7	8	9	
see page 3											

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.72

**BOSCH**

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Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-1050 P0/332 Dr, 334 DR, 350 DR, 363 DR

ca.43	1050	16,0	
	1120	10,6	*
	1170	6,0	

ca.20	300	6,0		
	150	20 - 21	1030	0
	300	5,7-6,3		
	450	3,1-4,5	400	0,2-0,4
	640	0 - 2		

300-1050 P0/333DR

ca.43	1050	16,0	
	1120	10,6	*
	1170	6,2	

ca.20	300	6,0		
	150	19 - 21	1030	0
	300	5,7-6,3		
	450	3,0-4,4	400	0,4-0,6
	640	0 - 2		

300-1050 P0/334 R, ..P0/350 R

ca.43	1050	16,0	
	1120	10,6	*
	1170	6,0	

ca.20	300	6,0		
	150	20 - 21	1030	0
	300	5,7-6,3		
	450	3,0-5,4	500	0
	630	0 - 2	360	1,2-1,8

300-1100 P0/335R, 364R, 380

ca.44	1100	16,0	
	1160	11,2	*
	1210	6,6	

ca.19	300	5,5		
	150	20 - 21		
	300	5,2-5,7	Ajust on	
	400	0 - 2	engine as	
			required	

300-950 P0/336 DR

ca.40	950	16,0	
	1020	10,6	*
	1070	6,2	

ca.20	300	6,0		
	150	20 - 21	930	0
	300	5,7-6,3		
	450	2,9-4,4	400	1,6-1,8
	630	0 - 2		

300-800 P0/337DR

ca.35	800	16,0	
	860	11,7	*
	920	5,8	

ca.18	300	5,5		
	150	20 - 21	780	0
	300	5,2-5,8		
	450	2,3-3,8	550	0,3-0,5
	600	0 - 2	400	0,8-1,0

300-1050 P0/360 DR

ca.43	1050	16,0	
	1120	10,5	*
	1170	6,0	

ca.20	300	6,0		
	150	20 - 21	1300	0
	300	5,7-6,3		
	450	3,0-4,5	400	0,1-0,3
	630	0 - 2		

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Governor Idle speed/stop U/min cm³/1000
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min mm
1	2	3	4	5	6	7	8
1080	162 - 164	1125:0,5-1,5	600	205 - 209	100	mind.18,5	..PO/332R
600	123 - 127	*	1200	3 mm RW			325 = 25-35
1030	138 - 140	1075:0,5-1,5	800	165 - 169	100	mind.18,5	..PO/333DR
		*	1155	3 mm RW			1 mm vor Stop
1030	147 - 149	1075:0,5-1,5			100	mind.18,5	..PO/334R
		*					325 = 25-35
1030	151 - 153	1075:0,5-1,5	800	172 - 176	100	mind.18,5	..PO/334DR
		*					325 = 25-35
800	123 - 127		1145	3 mm RW			
1080	192 - 194	1125:0,5-1,5	-	-	100	mind.18,5	..PO/335R,380
		*					325 = 25-35
1080	109 - 113		1200	3 mm RW			
930	156 - 158	975:0,5-1,5	700	203 - 207	100	mind.18,5	..PO/336DR
		*					1 mm vor Stop
700	150 - 154		1035	3 mm RW			
780	151 - 153	825:0,5-1,5	600	185 - 189	100	mind.18,5	..PO/337R
		*					1 mm vor Stop
			870	3 mm RW			
1030	113 - 115	1075:0,5-1,5	350R: 1135	3 mm RW	100	mind.18,5	..PO/350R ..PO/350DR
		*					325 = 25-35
			350DR: Attach retainer				
1030	158 - 160	1075:0,5-1,5	700	203 - 207	100	mind.18,5	..PO/360DR
		*					
700	147 - 151		1155	3 mm RW			325 = 25-35
							..PO/363DR
1080	192 - 194	1125:0,5-1,5			100	mind.18,5	
		*					
1080	5,4mm RW *		1200	3 mm RW			..PO/364 R

When checking extend by  $\pm 1 \text{ cm}^3$  (col 4 and 5)!  
Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test with nozzle 0 681 443 014 - EFEP 182 or complete nozzle-holder assembly 0 681 343 009 - EF 8511/9a and overflow valve 1 417 413 025 - EPVE 176 P 2 Z, supply pressure 1.5 kp/cm<sup>2</sup> (scavenging).

Connecting components and modified start-of-delivery measuring device, see VDT-BMP 115/9.

1. Adjust start of delivery at prestroke.

(Conversion of the device 1 688 130 085 - EFEP 388 A and plug on drive side)

At start of delivery, exhaust port 1, check device (timing pin) at FP flange to see whether the pin latches into the camshaft when it (the pin) is pressed in. If necessary, reposition flange and secure.

2. Adjust fuel delivery - Section A of the test sheet - (for connecting components, see VDT-BMP 115/9).

3. Test governor - Section B - preadjustment without manifold-pressure compensator (for special adjustment, see Points 4.2 and 4.3)

4. Section C, adjust full-load delivery - column 1-2 for equipment with manifold-pressure compensator, set higher full-load delivery when manifold-pressure compensator disassembled (note control-rod travel (in mm) for Point 4.2).

4.1 Fuel-delivery curve - column 4-5, correct with torque-control spring retainer. Check whether full-load delivery is unchanged.

4.2 Engine-speed limitation: at maximum full-load speed + 25 r/min., control-rod travel must be 0.5 - 1.5 mm less than at full-load delivery given in column 2. Adjust maximum-speed stop screw.

4.3 High idle: test according to column 4-5; to obtain the specified control-rod travel, alter pretension of the rocker if necessary (tolerance  $\pm 10$  r/min). Check whether engine-speed limitation (Point 4.2) is unchanged.

4.4 Preset manifold-pressure compensator while in disassembled state: (for manifold-pressure compensator ..004 and ..007)  
Screw out stop screw from diaphragm housing.

Governor	..P0/332, /335	..P0/336/360, /364
<u>380</u>	Start of adjustment = 0.3 kp/cm <sup>2</sup>	Start of adjustment = 0.15 kp/cm <sup>2</sup>
<u>0.14-0.27</u>	End of adjustment = 1.1 kp/cm <sup>2</sup>	End of adjustment = 0.7 kp/cm <sup>2</sup>
adjust as required by pushing beneath the diaphragm spring.		

At 1.5 kp/cm<sup>2</sup> charge-air pressure, set an immersion depth of 15.75 + 0.1 mm (contact surface of stop pin up to end face without gasket).

Pretension of the spring, measured at the contact surface of the stop pin, must be  $6.15 \pm 0.65$  kp.

If readjustment of the immersion depth is necessary, adjusting screw and lock nut must be adjusted simultaneously so that spring pretension of the elastic element is maintained.

Limit travel of the stop pin to between 0 - 1.5 kp/cm<sup>2</sup>, charge-air pressure = 5.1 - 5.6 mm at the stop screw of the diaphragm housing.

Make sure that all components move freely when adjusting the charge-air pressure!

4.5 Mount manifold-pressure compensator.

Using stop screw at top in diaphragm housing, adjust minimum full-load delivery in accordance with column 1-2 (fuel delivery under induction operation).

5. Test start control-rod travel - column 6-7 (without charge-air pressure).

6. Adjust idle stop/shutoff stop - column 8.

# **Test Specifications Fuel Injection Pumps and Governors**

40

VDT-WPP 001/4 IHC 9,4b  
Edition

6

PESV 8 P 100/320RS9 EP/RSV 300/1225 P0/341 D  
300-1150 P0/343,346D  
300-1300 P0/344,359  
300-1200 P0/345D  
300-1250 P0/348D,362D

supersedes 1.71  
company IHC  
engine DV 573..

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

#### **A. Fuel Injection Pump Settings**

Port closing at prestroke 2.8 ± 0.1

mm (from BDC)

Instruction:  
Test details see page 4!

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	10	9,0-9,6	0,4			
600	6	1,3-2,3				
600	12	10,7-12,2				
600	15	11,4-12,9				
200	6	4,1- 5,3				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

The numbers denote the sequence of the tests

### **C. Settings for Fuel Injection Pump with Fitted Governor**

<b>2b</b> Full-load stop Test oil temp. 40°C (104°F)	<b>6</b> Rotational- speed limitat Note changed to ) rev/min	<b>3a</b> Fuel delivery characteristics	Starting fuel delivery		<b>5</b>	<b>4a</b> Idle stop		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9
			see page 3					

### Checking values in brackets

\* 1 mm less control rod travel than col 2

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-1225 PC/341 D

ca.66	1225 1320 1450	16,0 12,1 5,1	*			ca.35	300	6,0	1200	0
300-1150	PO/343 D								600	0 - 0,2
ca.62	1150 1280 1400	16,0 10,7 3,8	*			ca.33	300	6,0	1130	0

300-1300 PO/344, 359

ca.69	1300 1420 1540	16,0 10,3 2,7	*			ca.35	300	6,0		
300-1200	PO/345 D									
ca.67	1200 1330 1470	16,0 10,8 2,8	*			ca.37	300	6,0	1180	0

300-1150 PO/346 D

ca.66	1150 1320 1440	16,0 9,3 2,6	*			ca.37	300	6,0	1130	0
									600	0,5-0,7

300-1250 PO/348 D, 362D

ca.66	1250 1400 1500	16,0 9,0 2,8	*			ca.35	300	6,0	1230	0
									600	0,2-0,4

Testoil-ISO 4113

### C. Settings for Fuel Injection Pump with Fitted Governor

IHC 9,4 b

Full-load stop Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation rev/min	Fuel delivery characteristics		Starting fuel delivery idle switching point		Governor Idle speed/stop U/min cm³/1000	
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1205	85,5-87,5	1250:0,5-1,5	900	98 - 101	100	14,5-17,5	..50/341D	
900	47,5-51,5	* **(VH ca.61°)	1350	3,, RW			300 = 10 - 22	
1130	79,5-81,5	1175:0,5-1,5	800	93,5-96,5	100	14,5-16,5	..P0/343D	
800	53,5-57,5	* **(VH ca.57°)	1260	3 mm RW			300 = 10 - 22	
1280	98 - 100	1325:0,5-1,5	1430	3 mm RW	100	14,5-16,5	..P0/344	
1280	62 - 66	* **(VH ca.64°)					300 = 10 - 22	
1180	70,5-72,5	1225:0,5-1,5	850	84,0-87,0	100	14,5-16,5	..P0/345D	
		* **(VH ca.61°)	1320	3 mm RW			1 mm in front of stop	
1130	67,5-69,5	1175:0,5-1,5	800	85,0-88,0	100	14,5-16,5	..P0/346D	
		*	1320	3 mm RW			1 mm in front of stop	
1230	94,5-96,5	1275:0,5-1,5	900	110-113	100	14,5-16,5	..P0/346D	
900	56,0-60,0	* **(VH ca.62°)	1375	3 mm RW			300 = 10 - 22	
1280	98 - 100	1325:0,5-1,5	1430	3 mm RW			..P0/350	
1280	55 - 59	* **(VH ca.64°)					300 = 10 - 22	
1330	83,5-85,5	1275:0,5-1,5	900	98 - 101			..P0/362D	
900	49 - 53	* **(VH ca.62°)	1375	3 mm RW			300 = 10 - 22	

When checking (column 3 and 5) increase by 1 cm³!

\*\* Control lever

**Testoil-ISO 4113**

Checking values in brackets

-3-

\* 1 mm less control rod travel than col. 2

Test equipment and holding parts as per WPP 115/1 - 1st supplement.

Connection parts as per BMP 115/9

- Set start of delivery on prestroke; test angular cam spacing.  
(Please observe designation of outlets as per WJP 115/1 and give appropriate consideration to BMP 115/5.)

1 - 4 - 7 - 2 - 6 - 3 - 5 - 8 - 1  
0 -90 -105-135-195-225-240-330-360°

- Set fuel delivery - Section A of test-specification sheet - (refer to BMP.. for connection parts)
- Test governor - Section B - pre-adjustment without manifold-pressure compensator (refer to Items 4.2, 4.3 and 4.4 for special setting)
- Set full-load delivery - Section C, Column 1-2 - when equipped with manifold-pressure compensator, set larger full-load delivery with manifold-pressure compensator removed.
- Correct fuel-delivery characteristics - Column 4-5 with torque-control retainer. Check whether full-load delivery unchanged.
- Rotational-speed limitation: at upper rated speed + 25 rpm (+5), control-rod travel must be 0.5-1.5 mm less than with full-load delivery as per Column 2.  
Position end stop screw.
- High idle: test as per Column 4-5; change pre-tension of rocker if necessary (tolerance  $\pm$  10 rpm) to attain prescribed control-rod travel ( $\pm$  0.1). Check whether rotational-speed limitation (Item 4.2) unchanged.
- Perform idle-position regulation, then position auxiliary spring at tensioning lever, turn back 1 turn and secure.
- Pre-adjust removed manifold-pressure compensator: unscrew stop screw in diaphragm housing.

Start of adjustment 0.07-0.20 kp/cm<sup>2</sup>  
End of adjustment 0.62-0.75 kp/cm<sup>2</sup>

Adjust if necessary by way of washers beneath diaphragm spring.

At 1.5 kp/cm<sup>2</sup> manifold pressure, set immersion depth of 15.75 $\pm$ 0.1 mm (contact surface of stop pin to end face without seal).

Pre-tension of spring measured at contact surface of stop pin must be 6.15  $\pm$  0.65 kp.

If the immersion depth has to be adjusted, the adjusting screw and lock nut must be adjusted simultaneously, so as to maintain the spring preload of the spring-mounted element.

Limit travel of stop pin between 0 and 1.5 kp/cm<sup>2</sup> manifold pressure = 4.70-4.85 mm at stop screw of diaphragm housing.

Make sure all parts move freely when adjusting manifold pressure!

- Attach manifold-pressure compensator.

With stop screw in diaphragm housing set smaller full-load delivery as per Column 1-2. (= Fuel delivery on induction)

- Test starting control-rod travel - Column 6-7 (without manifold pressure).

- Set idle/shutoff stop - Column 8

# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

VDT-WPP 001/4

6. Edition

En

PES 6 P 100 A 720 RS 1010

EP/RSV 400-1050 P2/370 D

supersedes 12.74 (4)  
company John Deere  
engine 6531 A

**Testoil-ISO 4113**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,8	14,8-15,0	0,3			
400	6,7	1,9-2,5	0,3			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

EP/RSV ..370 D

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control-lever deflection in degrees	Control rod travel mm	Control rod travel rev/min	Control rod travel mm	
1	2	3	7	8	9	10	
ca.43	1050 1100 1150	15,6-16,4 6,2- 9,6 3,8- 5,2	without auxiliary spring	ca.19 400 200 350 400 600 750	7,2 19-21 11-14 7,2 1,4-4,2 0 -1,5	1050 750 500	0 0,8-1,0 0,8-1,0
2a		1220 1260	with auxiliary spring				

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop	6	Rotational-speed limitat	3a	Fuel delivery characteristics	Starting fuel delivery	5	4a	Idle stop
rev/min	Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm³/1000 strokes	Idle rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	9
1,0	bar		1085-1095	1155	24 - 32	100	160-190		
1050	148,0-150,0			XX		400	19-25		
750	164,5-167,5								
0	bar								
550	108-116								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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J5

J5

**B. Governor Settings**

EP/RSV ..370DR

1 Upper rated speed rev/min Degree of deflection of control lever			Intermediate rated speed			4 Control-lever deflection in degrees		Lower rated speed rev/min		3 Torque control rev/min	
1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	7	8	9	10	11	
ca.38	1040 1080 1120	16,0 11,2 5,2				ca.17	400	7,2	1050	0	
	1050 1100 1280	ca.10,6 ca. 4,7 0,3-1,0	without auxiliary spring			200	19 - 21		800	0,6-0,8	
						400	6,9-7,5		500	0,8-1,0	
			with auxiliary spring			550	3,3-5,1				
						780	0-1				
2a											

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop Test oil temp. 40°C (104°F)			6 Rotational-speed limitat. Note: changed to ...)		3a Fuel delivery characteristics			Starting fuel delivery Idle		5		4a Idle stop	
rev/min	cm³/1000 strokes	3	4	5	rev/min	cm³/1000 strokes	6	7	cm³/1000 strokes	8	rev/min	Control rod travel mm	9
LDA	1,0 bar		LDA		0 bar								
1050	151,0-153,0	1085-1095*	550		108,0-116,0			100	160 - 180				
750	161,0-167,0		1150		24,0 - 44,0			400	21,0-27,0				
2a													

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**B. Governor Settings**

1 Upper rated speed rev/min Degree of deflection of control lever			Intermediate rated speed			4 Control-lever deflection in degrees		Lower rated speed rev/min		3 Torque control rev/min	
1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	7	8	9	10	11	
2a											

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop Test oil temp. 40°C (104°F)			6 Rotational-speed limitat. Note: changed to ...)		3a Fuel delivery characteristics			Starting fuel delivery Idle		5		4a Idle stop	
rev/min	cm³/1000 strokes	3	4	5	rev/min	cm³/1000 strokes	6	7	cm³/1000 strokes	8	rev/min	Control rod travel mm	9
2a													

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Ppe 1010 -3-

Pump/governor	Setting Gauge pressure =	bar	Measurement Gauge pressure =	bar	Control rod travel: mm	diminution difference (1)
1010 with 370 DR:	0,62		0,20			- 0,2 mm - 2,3 mm

Notes

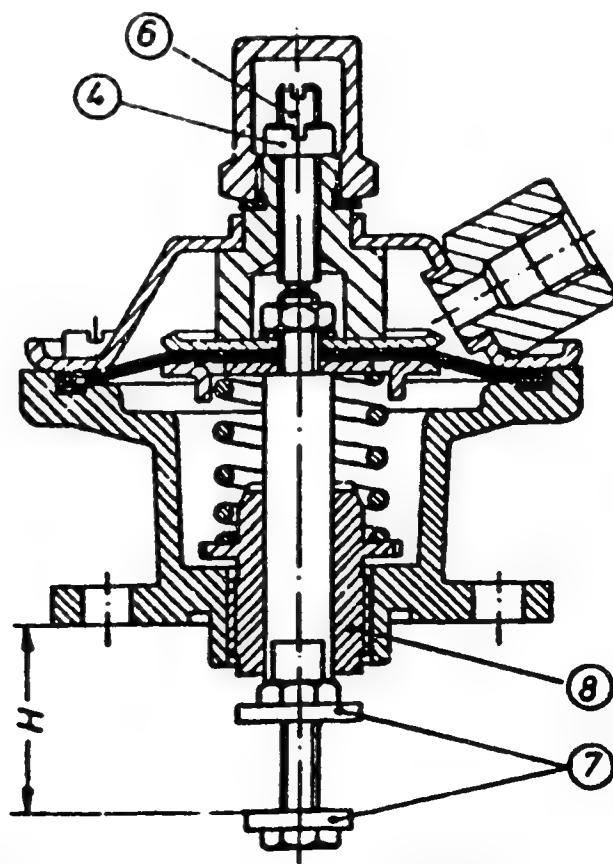
(1) when n = 500 rev/min and gauge pressure = 1,0 bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test sequence:

1. Basic setting of pump and governor (Section A-B) without manifold-pressure compensator.
2. Adjust full-load delivery - delivery indication max. charge-air pressure - with full-load stop screw of governor. Measure fuel-delivery characteristics at 750 rpm; correct if necessary with torque-control retainer.
3. Pre-adjustment of manifold-pressure compensator: set dimension H - contact surface to lower stop screw (Item 7) -: Screw in adjusting screw in cover until this causes the diaphragm to be lifted off by 0.5 mm (delivery correction possibility during induction); counterhold screw during this operation to prevent diaphragm damage (items 4 and 6).
4. Fit manifold-pressure compensator taking care to ensure that bell crank is positioned between washers of lower stop screw. To do so, move bell crank sideways and position approx. 45° upwards. Pay attention to O-ring! As a check, actuate stop lever - full-load control-rod travel must be set. If starting travel is attained, bell crank is not properly in position. If less than full-load control-rod travel is attained, enlarge dimension H accordingly.
5. Connect compressed air - adjustment test at 500 rpm: test start and end, correct at guide bushing of helical spring. Establish control-rod-travel difference (Item 8).
6. Measure induction delivery (0 bar) - correct if necessary in accordance with Item 3!
7. Check/adjust full-load delivery, engine-speed limitation, idle and starting fuel delivery.

\* Dimension H  
370 DR = 33.3 mm



# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

8. Edition

En

PES 4A85 D 420 LS 2459 EP/RSV 375-1000 A 2 E 547 DR

superseads	11.9.69, 23.4.70
Case	29.4.70
company	A301 BD 19.6.70
engine	19.2.71
	29.4.71
	19.4.72

**Test with case overflow valve!**  
**Pay attention to special governor setting!**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,15 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	11,3	4,1 - 4,5	0,3			
375	7,5	1,6 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca.39	1040	10,8-11,6	without auxiliary spring			ca.21	375	7,5	1000	0
	1050	9,6-10,0					150	19 - 21	800	1,0 - 1,1
	1080	5 - 6,2					375	7,2-7,7	400	2,0 - 2,2
	1140	0,8- 2,6					600	0 - 1		
2a	1200	0,3- 1,0	with auxiliary spring				300	11,6-14,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery idle	5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	cm³/1000 strokes	6	7 mmRW	8
1100	70,5 - 72,5	1040-1055*	1090	12,9 - 18,9	100	12,9-13,5	375
600	85,5 - 89,5						
500	max. 88,0						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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8.74

# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

VDT-WPP 001/4  
3. Edition

En

PES 6A 85 D 420 LS 2460 EP/RSV 375-1050 A 2B 521 DR

supersedes 29.10.70, 29.4.71  
Case  
company A 451 BD  
engine

**Test with case overflow valve!**

**Pay attention to special governor setting!**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

**Testoil-ISO 4113**

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1050	11,4	7,5 - 7,9	4,0			
375	7,5	1,4 - 2,0				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control-lever deflection in degrees	Control rod travel mm	Control rod travel mm rev/min	Control rod travel mm
1	2	3	7	8	9	10
ca.40	1100	10	without auxiliary spring	ca.20	375	7,5
	1180	2,4-4			150	19-21
2a	1090	11,5-12	with auxiliary spring		375	7,3-7,7
	1280	0,2-1,2			600	0 - 1
	1130	6,2-7,2			280	10 - 12
					480	1,2-3,5

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full load stop	6	Rotational-speed limitat.	3a	Fuel delivery characteristics	Starting fuel delivery idle	5	4a	Idle stop
Test oil temp 40°C (104°F)	rev/min cm³/1000 strokes	Note changed to rev/min	4	5	rev/min cm³/1000 strokes	6	7	8	Control rod travel mm
1	2	3				6	7	8	9
1050	75,0-78,0	1090-1105*	1150	11 - 17		100	120-130	375	14 - 20
650	81 - 86								
550	max. 84								

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

3. Edition

En

PES 6 A 85 .. D 420 LS 2460 EP/RSV 375-1100 A 2 B 605 DR

supersedes 17.2.71, 28.4.71  
company Case  
engine A401 BD

**Test with case overflow valve!**  
**Pay attention to special governor setting!**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15+0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,5	6,1 - 6,2	0,3			
375	5,7	1,2 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

① Upper rated speed rev/min	Intermediate rated speed			④ Lower rated speed rev/min	③ Torque control rev/min	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min		Control-lever deflection in degrees	Control rod travel mm	
ca. 46	1150	9 - 9,6	without auxiliary spring	ca. 24	375	6,5
	1250	1 - 2,5			150	19 - 21
	1140	10,0-10,6			375	6,3-6,7
2a	1200	4,4- 5,4	with auxiliary spring		600	0 - 1
	1300	0,2- 1,2			250	10,7-12,7
					480	1,6- 3,9

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)	⑥ Rotational-speed limit Note changed to 1 rev/min	③a Fuel delivery characteristics	Starting fuel delivery Idle	⑤	④a Idle stop Control rod travel rev/min
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	6	8
1100	60,5-62,5	1140-1155*	1200	8 - 14	100
600	69 - 74			120 - 130	375
500	max. 72				12 - 18

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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8.74

# Test Specifications Fuel Injection Pumps 1A and Governors

40

3. Edition

En

PES 6 A 90 D 420 LS 2461

EP/RSV 375-1050A2B 723DR

supersedes

company

Case

engine

A 451 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	13,8+0,1	11,0-11,2	0,3			
375	7,0-7,2	1,4- 2,0				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control Control rod travel rev/min mm 10 11
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	
ca. 40	1090	12,2-12,8	without auxiliary spring	ca. 17	375	7,1	1050	0	0,1 - 0,3
	1100	11,2-12,4			150	19 - 21			
	1120	7,4-10			375	6,9-7,3			
	1150	4 - 5,8			450	2,8-4,5			
2a	1250	0,2- 1,2	with auxiliary spring	320	550	0 - 1	800	0,1 - 0,3	0,1 - 0,3
					320	11,6-14,6			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limit Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle	5	4a Idle stop Control rod travel rev/min mm	
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
1050	109 - 113 (108 - 114)	1090-1105* (1085-1110)	1150	10 - 16	100	13,5-14,5	375	14,5- 20,5 cm³ / 1000 H.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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3.76

Testoil-ISO 4113

J12

J12

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4  
1. Edition

En

PES 6 A 95 D 410 RS2479 EP/RSV 600-1100 A2B771L,

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

supersedes -  
company John Deere  
engine 6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9+0,1(-0,05)^{+0,15}$

Port closing mark cyl. 1 :  $14^\circ$  after port closing  
mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	9,8	8,8 - 9,1	0,3			
600	5,1	1,2 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

600-1100 A2B771 L

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control Control rod travel rev/min 10
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	
ca. 40  2a	1150	8,8	without auxiliary spring	ca. 23	600	6	5,1	1100	0
	1200	6,0			200	19 - 21			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle	5 Idle stop	4a Idle stop
rev/min	cm³/1000 strokes	3	rev/min	cm³/1000 strokes	6	7	8
1100	87 - 91 (85 - 93)	1145-1150* (1140-1160)	1200	20 - 30	100	160 - 180	
					600	12 - 16	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2479

EP/RSV 400-1100 A7B772L

supersedes  
company John Deere  
engine 6404 T

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 (<sup>+0,15</sup><sub>-0,05</sub>) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1080	10	8,9 - 9,1	0,3			
400	6	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed 4	5	6	4 Control-lever deflection in degrees 7	Lower rated speed rev/min	Control rod travel mm	3 Torque control rev/min	Control rod travel mm
2	3					8	9	10	11	
ca. 70°	1100	10				ca. 29	400	6	1080	0
			without auxiliary spring				100	19 - 21		
							400	5,9-6,1	400	0
2a	1115- 1125 1145	9 4,6	with auxiliary spring				520- 580	2	300	1,2 - 1,8

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min	6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics rev/min	Starting fuel delivery Idle	5 Idle stop rev/min	4a Control rod travel mm
1	2	3	4	5	6
1080	88 - 92 (86 - 94)	1115-1125 (1110-1130)			100 600 1175
					160 - 180 12 - 16 21 - 27
					600
					5,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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9.76

J14

# Test Specifications

## Fuel Injection Pumps ①A

### and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2479

EP/RSV 400-1200 A2B773DL

supersedes  
company  
engine

John Deere  
6404 T

Test-pressure line 6 x 2 x 600

Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 ( $+0,15$   
 $-0,05$ ) mm (from BDC)

Rotational speed rev/min:	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	9,5	8,9-9,1	0,3			
400	5,8	1,1-1,5				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

### B. Governor Settings

600-1100 A2B771 L

① Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	③ Control rod travel mm 11	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm			
ca. 40	1200	15,7-16,3	without auxiliary spring	ca. 23	400	5,8	1200	0	850	0,5 - 0,7	
	1210	15,2-15,6			200	19 - 21					
	1300	5,4- 8,7			750	0 - 1					
	1380	1,7- 4			350	8,8-11,6					
②a	1550	0,3- 1,7	with auxiliary spring		400	5,7- 5,9	600	0,5 - 0,7			
					550	2,2- 4					

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)	⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop Control rod travel mm 8	④a Idle stop Control rod travel mm 9
	rev/min	cm³/1000 strokes	Note changed to ) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	
1200	88 - 90,5	1245-1255				100	160-180	600
800	91,5- 96,5					400	11- 15	

(increase by + 2,0 cm³ !)

Checking values in brackets

\* 1 mm less control rod travel than col 2

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J15

JAS

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4  
1. Edition

PES 6 A 95 D 410 RS2479 EP/RSV 600-1100 A2B774L

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

En

supersedes  
company  
engine

John Deere  
6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 (<sup>+0,15</sup><sub>-0,05</sub>) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	9,4	8,0 - 8,2	0,3			
600	5,3	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

600-1100 A2B771 L

① Upper rated speed rev/min	Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed rev/min		③ Torque control rev/min
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3		7	8	9	10
ca.40	1150	8,4	without auxiliary spring	ca.23	600	5,3	1100
					600	5,2-5,4	
②a	1200	5,0	with auxiliary spring		100	19 - 21	
					670-730	2	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min	⑥ Rotational-speed limitat Note changed to rev/min 3	③a Fuel delivery characteristics rev/min	Starting fuel delivery Idle rev/min	⑤	④a Idle stop Control rod travel mm 9
1	2	3	4	5	6
1100	79-83	1150-1160 (1145-1165)			100 15,5-17,5 600 12 - 16 1200 21 - 31

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2500 EP/RSV 600-1100 A2B771L

Test-pressure line 6 x 2 x 600

supersedes -  
company John Deere  
engine 6404 T

Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 ( $^{+0,15}_{-0,05}$ ) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	9,8	8,8 - 9,1	0,3			
600	5,1	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

600-1100 A2B771 L

① Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
ca. 40	1150	8,8	without auxiliary spring	ca. 23	600	④ Control-lever deflection in degrees 7	5,1	1100	0	Control rod travel mm 11
	1200	6,0			100		19 - 21			
2a			with auxiliary spring	600	5,0-5,2	670-730	2			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)	⑥ Rotational-speed limitat Note changed to rev/min		③a Fuel delivery characteristics	Starting fuel delivery Idle		⑤ Idle stop	④a Idle stop Control rod travel mm
rev/min 1	cm³/1000 strokes 2	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	cm³/1000 strokes 9
1100	87 - 91	1145-1155 (1140-1160)		100	160-180		
	(increase by + 2,0 cm³!)			600	12- 16		
				1200	20- 30		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2500 EP/RSV 400-1100 A7B772L

supersedes  
company  
engine

-  
John Deere  
6404 T

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 (-0,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1080	10	8,9 - 9,1	0,3			
400	6	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in [ ]

### B. Governor Settings

600-1100 A2B771 L

Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees	Lower rated speed		Torque control rev/min	Control rod travel mm
	1	2	3	4	5	6	7	8	9	
ca. 40	1100	10					ca. 23	400	6	1080
	1145	4,6						100	19 - 21	400
	1115-1125	9,0						400	5,9-6,1	300
2a				without auxiliary spring				520-580	2	1,2-1,8
				with auxiliary spring						

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop rev/min	Test oil temp. 40°C (104°F) cm³/1000 strokes	(6) Rotational-speed limitat. Note changed to rev/min	(3a) Fuel delivery characteristics rev/min cm³/1000 strokes		(5) Starting fuel delivery rev/min	(4a) Idle stop rev/min
			4	5		
1080	88 - 92 (86 - 94)	1115-1125 (410-1130)			100	160 - 180
	(increase by + 2,0 cm³!)				400	12 - 16
					1145	25 - 33

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS 2500 EP/RSV 400-1200 A2B773DL

Supersedes -  
company John Deere  
engine 6404 T

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-0,1 ( $+0,15$ ) mm (from BDC)  
 $-0,05$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	9,5	8,9 - 9,1	0,3			
400	5,8	1,1 - 1,5				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

600-1100 A2B771 L

① Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min	Control rod travel mm			
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm					
ca.40	1200	15,7-16,3	without auxiliary spring	ca.23	400	5,8	1200	0	850	0,5-0,7			
	1210	15,2-15,6			200	19 - 21							
	1300	5,4- 8,7			350	8,8-11,6							
	1380	1,7- 4			400	5,7- 5,9							
2a	1550	0,3-1,7	with auxiliary spring		550	2,2- 4	600	0,5-0,7					
					750	0- 1							

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)	⑥ Rotational-speed limit		③a Fuel delivery characteristics			Starting fuel delivery Idle		⑤ Idle stop Control rod travel mm	④a Control rod travel mm
	rev/min	cm³/1000 strokes	Note changed to 3	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes		
1200	88 - 90,5	1245-1255*				100	160 - 180	600	5,1
800	91,5- 96,5	(1240-1260)				400	11 - 15		
	(increase by ± 2,0 cm³ !)					1295	21,5-31,5		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D RS2500 EP/RSV 600-1100 A2B 774L

supersedes  
company  
engine

John Deere  
6404 T

Test-pressure line 6 x 2 x 600  
Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 (<sup>+0,15</sup><sub>-0,05</sub>) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	9,4	8,0 - 8,2	0,3			
	6,0	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

600-1100 A2B771 L

① Upper rated speed rev/min Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed	④ Control-lever deflection in degrees	Lower rated speed rev/min	③ Torque control
1	2	3	4	7	8	10
ca. 40	1150	8,4	without auxiliary spring	ca. 23	600	5,3
	1200	5,0			100	19 - 21
②a	1100	ca. 9,2	with auxiliary spring		600	5,2-5,4
	1170	4,6-5,6			670-730	2
	1270	0,3-1,0				

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)	⑥ Rotational-speed limitat Note changed to rev/min	③a Fuel delivery characteristics	Starting fuel delivery Idle	⑤	④a Idle stop Control rod travel mm
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min
1100	79 - 83	1150-1160 (1145-1165)		100 600 1200	15,5-17,5 12 - 16 21 - 31
	(increase by + 2,0 cm <sup>3</sup> !)				600 5,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 6 A 85C 420 LS 2264 EP/RSV 375-1050 A2B 667 D  
D .. LS 2460

supersedes 1.12.72  
company Case  
engine A 451 BD

**Test with case overflow valve!**  
**Pay attention to special governor setting!**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15+0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	4,1 - 4,5	0,4			
	6	1,1 - 1,9				
	12	7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in [ ]

### B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed			4	Lower rated speed rev/min	Torque control rev/min		Torque control rev/min	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	Control lever deflection in degrees	8	Control rod travel mm	10	Control rod travel mm	10	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 45	1070	10,7	without auxiliary spring	ca. 22	375	6,7	1050	800	500	0,7-0,9
	1120	6,4			150	19 - 21				
	1170	2,6			375	6,4-7,0				
2a	1090	10,2-10,8	with auxiliary spring		450	3,2-4,7	1050	800	500	1,0-1,3
	1150	4,6- 5,4			580	0 - 1				
	1260	0,3- 1								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limitat Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
1050	70,5 - 72,5		1090-1105*	1150	7,5 - 13,5	100	12,7-13,5	375	11 - 17
650	81,5 - 85,5		(1088-1110)						
550	Max. 84,6		-						

Checking values in brackets

\* 1 mm less control rod travel than col 2

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8.74

J21

J21

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4  
1. Edition

En

PES 6 A 95 D 410 RS2479 EP/RSV 400-1100 A2B768DL  
Test-pressure line 6 x 2 x 600

Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 2

supersedes  
company  
engine John Deere  
6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9+0,1(-0,05)$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1 1100	9,8	8,8 - 9,8	0,3			
2 400		1,2 - 1,6	0,3			
Port closing mark cyl.1:14° after port closing						

Adjust the fuel delivery from each outlet according to the values in [ ]

### B. Governor Settings

400-1100 A2B768DL

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca.44	1100	15,7-16,3	without auxiliary spring			ca.21	400	5,6	1100 0	
	1110	14,8-15,4					100	19 - 21		
ca.43	1220	4,6- 7,6	with auxiliary spring				330	9,4- 12	900 0,3-0,5	
							440	5,4-5,8	750 0,7-1,0	
2a							550	1,8-3,5	450 0,7-1,0	
							750	0 - 1		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
Test oil temp 40°C (104°F)	Note changed to ) rev/min	3	rev/min	cm³/1000 strokes	6	rev/min	cm³/1000 strokes	8	Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9	
LDA	0,7 bar								
1100	87 - 91	1145-1155*	LDA	0,7 bar	100	min 160	100	5,6	
750+	96 - 101		LDA	0 bar	400	12 - 16			
550+	63,5-70,5		750	96,0-101,0	1200	20 - 30			
(increase by : 2,0 cm³!)			550	63,5- 70,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4  
8. Edition

En

PES 6 A 95 D 420 LS 3024 EP/RSV 375-1100 A2 B516DR

supersedes 7.7.73  
company CASE  
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,8	11,2 - 11,4	0,3			
375	5,7	1,6 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

EP/RSV 375-1100 A2 B516 DR

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		Torque control	
	Degree of deflection of control lever	Control rod travel mm	Control rod travel mm	rev/min	6		Control lever deflection in degrees	rev/min	Control rod travel mm	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.39	1150	9 - 10	without auxiliary spring	ca.20	375	5,7	1100	0		
	1140	10,4-11,2			150	19 - 21	800	0,1 - 0,4		
2a	1180	4,8- 6			375	5,6-5,8	400	0,1 - 0,4		
	1220	1,2- 3,2			450	1,5-3,4				
	1280	0,3- 1			550	0 - 1				
					320	10 - 12,4				

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b		Full-load stop		6		Rotational-speed limit		3a		Fuel delivery characteristics		Starting fuel delivery Idle		5		4a		Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	rev/min	Note changed to 1 rev/min	3	rev/min	cm³/1000 strokes	6	rev/min	cm³/1000 strokes	7	rev/min	cm³/1000 strokes	8	rev/min	control rod travel mm			
	1	2			3		4		6		7		8		9				
1100	111 - 115		1140-1155	1200	12	- 18		100	13 - 14		375	16-22							
800	115 - 118		(1135-1160)																
700	max. 117																		
(increase by ± 1,0 cm³!)																			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH**

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J23

J23

# Test Specifications Fuel Injection Pumps **1A** and Governors

**40**

VDT-WPP 001/4

8. Ausgabe

En

PES 6 A 95 <sup>C</sup><sub>D</sub> 420 LS 3024 EP/RSV 375-1100 A2 B 599 DR

supersedes  
company  
engine

7.7.73  
CASE  
A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke **2,0 + 0,1** mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,8	11,2-11,4	0,3			
375	5,7	1,6- 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSV 375-1100 A2 B599 DR

① Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			④ Control lever deflection in degrees 7	Lower rated speed		③ Torque control			
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm		
ca.39	1140	10,5-11,2	without auxiliary spring	18°	375	5,7	1100	0	950	0,2-0,5		
	1150	9-10,2										
	1180	0,3- 1,0										
	1220	1,2- 3,2	with auxiliary spring	150 375 450 600 280	19 - 21 5,6-5,8 2,2-3,8 0 - 1 9,2-11,5	5,7	950	0,2-0,5				
	1300	0,3- 1,0										
②a									600	0,2-0,5		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat Note changed to rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle	⑤	④a Idle stop
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	6	7	rev/min
1100	111-115	1140-1155 (1135-1160)	1200	12 - 18	100	13 - 14	375
800	113-118						
700	max.117						
(increase by + 1,0 cm <sup>3</sup> !)							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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J24

J2H

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

8. Edition

PES 6 A 95 D 420 LS 3024 EP/RSV 375-1100 A2 659 DR

En

supersedes 7.7.73  
company Case  
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1100	12,35-12,45	13,6-13,8	0,4			
375	5,9	16,5-22,5				

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

EP/RSV 375-1100 A2 B659DR

Degree of deflection of control lever	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed rev/min		3 Torque control rev/min	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		8	9	10	11
ca. 43°	1150	9,6-10,4				ca. 20	375	5,9	1100	0
	1140	11-11,8	without auxiliary spring				150	19 - 21		
	1200	2,6 - 4,6					375	5,8 - 6		
(2a)	1280	0,2 - 1,2	with auxiliary spring				450	1,8 - 3,5	750	0,3
	1170	6,4 - 8					550	0 - 1		
							320	9,5 - 12	400	0,55-0,85

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40 °C (104 °F)		6 Rotational-speed limit Note changed to rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9
1100	136 - 138	1140-1155 (1135-1160)	1200	21 - 27	100	13 - 14	375	16,5-22,5 cm³/1000 strokes
750	144 - 147							
650	max 147							
(increase by + 1,0 cm³!)								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K1  
K1  
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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

VDT-WPP 001/4  
8. Edition

En

PES 6 A 95 D 420 LS 3024 EP/RSV 375-1100 A2 B697DR

supersedes 7.7.73  
company CASE  
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	8,4 - 9,0	0,4			
	6	4,0 - 5,0				
	15	16,5 - 17,8				
	6	1,4 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

EP/RSV 375-1100 A2 B697DR

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control Control rod travel rev/min	Control rod travel mm
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	mm		
ca.39	1150	9 - 10,4	without auxiliary spring	ca.20	375	375	5,7	1100	0	1100
	1140	10,6-11,4			150	19 - 21	750	0,1 - 0,3	750	0,1 - 0,3
	1170	6,4- 7,6			375	5,6-5,8	500	0,1 - 0,3	500	0,1 - 0,3
	1280	0,2- 1,2	with auxiliary spring		450	1,3-3,3				
	1200	2,8- 4,5			550	0 - 1				
					320	10 - 13				
2a										

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop		6	Rotational-speed limitat		3a	Fuel delivery characteristics		Starting fuel delivery idle	5	4a	Idle stop Control rod travel mm
	Test oil temp 40°C (104°F) rev/min	cm³/1000 strokes		Note changed to rev/min	4		rev/min	cm³/1000 strokes	6	7	8	9
1100	123 - 127		1140-		1200	22 - 28			100	13 - 14	375	16-22 cm³/ 1000
750	123 - 128		1155									
650	max. 126											
	(increase by + 1,0 cm³!)											

Checking values in brackets

\* 1 mm less control rod travel than col 2

K2  
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# Test Specifications Fuel Injection Pumps 1A and Governors

**40**

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2479 400-1100 A2B769DL

Test-pressure line 6 x 2 x 600

Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 2

Supersedes  
company  
engine

John Deere  
6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9+0,1(-0,05)$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,8-9,9	7,5 - 8,0	0,4			
200	6	3,2 - 4,2				
	6	0,5 - 1,4				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	
ca.44	1100	16,0	without auxiliary spring	ca.21	400	5,6	1080	0	450	0,7-1,0		
	1180	9,8			200	19 - 21						
	1220	6,0			400	5,3-5,9						
ca.43	1100	ca.9,5	with auxiliary spring	500	720	3,3-4,4	450	0,7-1,0				
	1200	ca.4,7			0 - 1	0 - 1						
2a	1330	0,3-1,0										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop		6	Rotational-speed limitation		3a	Fuel delivery characteristics		Starting fuel delivery Idle	5	4a	Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	Note	changed to	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm		
LDA	0,7 bar		LDA	0,7 bar									
1100	87,5 - 89,5		1140-1150*	750	(1135-1155)	97,0 - 100,0		100	159 - 179	100	5,6		

(increase by + 2,0 cm³!)

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 8 A 75 D 320 RS 2463

RQV 300-1500AB 912D (1)\*  
913D (2)\*  
914D (3)\*

supersedes -  
company: IHC  
engine DV 550 C

Inlet pressure 2.5 bar (1) See note 1,2,3 -page 3!

(1-180 PS)\*  
(2-160 PS)\*  
(3-200 PS)\*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke (2,3)			mm (from BDC)					
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve)		
1	2	3	4	2	3	6		
1500	9,65-9,75	5,88-5,98	0,3					
	(± 0,05)							
300	9,65	0,1-1,5 - 3,7-4,6 -	cyl. 1- 4-6-7) cyl. 2- 3-5-8)					

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

RQV ..912 D (1)\*

Upper rated speed Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			Lower rated speed Degree of deflection of control lever	rev/min Control rod travel mm	Sliding sleeve travel rev/min mm	
			1a	2a	4				
1	2	3			4	7	8	10	11
ca.68	1600	15,0-18,5	-	-	-	ca.10	250	6,5-8,2	
	2000	0					400	2,9-4,5	
	1700	9,0-14,0					500	2,3-3,3	
	2000	0					650	1,1-2,1	
							860	0	

Torque control travel a = 0,3 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point	6	Torque-control travel
rev/min	cm³/1000 strokes	2b	4a	5a	6	7	5
1	2		3	4	5	6	8
1500	58,8-59,8	1600-1610*		1000	51,0-53,0	100	1500 9,7
1000	50,5-52,5	1650: 7-8mm RW				300	1000 10,0-10,1
							700 10,0-10,1
				Change-over point 150-230 U/min (130-250)		100	
						300	0)

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K4

BOSCH

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4  
1. Edition

En

PES 8 A 75 D 320 RS 2463 EP/RSV 450-1300 A O B 1088 D

supersedes  
company

IHC  
DV 550 C  
(172 PS)

Inlet pressure 2,5 bar (1)

See note 1,2,3 -page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,3)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	10,8	6,7-6,8	0,3			
	(± 0,05)					
300		0,1-1,5 - 3,6-4,2 -	- (cyl.1- - (cyl.2- 4-6-7) 3-5-8)			

Adjust the fuel delivery from each outlet according to the values in ■■■■■

## B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed			4	Lower rated speed			3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min
1	2	3	4	5	6	7	8	9	10	11
ca.52	1300	12,8-13,2	without auxiliary spring	ca.30	100	450	5,7	19 - 21	900	10,9-11,1
	1320	12,2-12,6								
2a	1500	4,8- 6,8			380	600	6,5- 21	6,5- 21	540	10,9-11,1
	1580	1,5- 4,0			600	750	1,5-3,5	1,5-3,5		
	1700	0,2- 1,2	with auxiliary spring		750		0 - 1	0 - 1		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop	6	Rotational-speed limitat	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop
Test oil temp 40°C (104°F)	rev/min	cm³/1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	9
1300	67,0-68,0	1385-1395*			100	112,0-135,0			
900	61,5-63,5	1475: 6-7 mm RW			450	8,0- 10,0	cyl.2-3-5-8		
					100	0	cyl.1-4-6-7		
					450	0			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.75

K5  
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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 100 D 410 LS 3029; RSV 400-1100 A 2 B 2019 DL

supersedes -

company John Deere  
engine 6466 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,95-2,05

Port closing at prestroke (1,9 -2,1 )

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1100	11,0	11,2-11,4	0,3(0,5)			
400	6,2	1,15-1,55	0,3(0,4)			

Port closing mark cyl. 1 : 15° after port closing

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,7				ca.19	400	5,7	1100	10,95-11,05
	X = 3,5						100	19,0-21,0	750	10,75
ca.43	1150	10,0					400	6,1- 6,3		
(2a)	1200	5,0					470-530	= 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40 °C (104 °F)		(6) Rotational-speed limitat Note changed to 1 rev/min	(3a) Fuel delivery characteristics		Starting fuel delivery Idle	(5)	(4a) Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8
1100	10,8,0-110,0	1145-1155*			100	170 - 200	
LDA	0,70 bar	(1140-1160)			400	11,5-15,5	
750	117,5-120,5				1200	25,0-35,0	
500	0 bar						
	81,0- 89,0						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K6  
BOSCH

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10.79

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4

1. Edition

En

PES 4 A 85 C 420 LS 2054  
RSV 300...850 A 5 B 136 DR

0 400 874 023

supersedes J.I. Case  
company A 301 D  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,0	6,55-7,05				
	6,0	2,35-3,15				
	15,0	14,0-14,8				
200	6,0	1,35-1,25				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed 4	5	6	④ Lower rated speed Control lever deflection in degrees 7	rev/min	Control rod travel mm	Lower rated speed Control rod travel mm	③ Torque control Control rod travel rev/min	Control rod travel mm
44°	865	9,2	without auxiliary spring	26°	300	5,5	830	0	700	0,2-0,5	
	880	8,0			100	19,0-21,0	700	0,2-0,5			
	920	5,2			300	5,2- 5,8	600	0,4-0,7			
②a	880	7,7-8,5	with auxiliary spring		400	1,5- 3,2	400	0,5-0,7			
	950	3 -4,2			500	0 - 1,0					
	1050	0 -1,0									

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min	cm³/1000 strokes 2	⑥ Rotational-speed limitat Note changed to rev/min 3	③a Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	⑤ Idle stop Control rod travel rev/min 8	Control rod travel mm 9
830	75,0-77,0	850 - 865	600 450 935	78,0-81,0 76,0-80,0 13,5-22,5	100	85,0-95,0		

Checking values in brackets

\* 1 mm less control rod travel than col 2

K7/11

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 100 D 410 RS3025Z EP/RSV 400-1100 A2B765DL  
 RS3025 EP/RSV 400-1100 A2B766DL  
 RS3025 EP/RSV 400-1100 A7B767

supersedes -  
 company John Deere  
 engine 6404 A

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

#### A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0+0,1(+0,15)$  mm (from BDC)  
 $-0,05$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,15-10,25	10,9-11,1	0,2			
400	6,3	1,35-1,75	0,3			

Port closing mark cyl. 1 :  $14^\circ$  after port closing

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

400-1100 A2B765DL / 3025Z

① Upper rated speed rev/min Degree of deflection of control lever	Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed		③ Torque control Control rod travel rev/min	② Control rod travel mm
	Control rod travel mm	Control rod travel mm rev/min	rev/min		Control rod travel mm	rev/min		
ca. 43	1100	10,15-10,25	without auxiliary spring	ca. 21	400	6,3	1100	10,2
	1145-1155	9,2			100	19 - 21		750 11,2
	1200	4,8			400	6,2-6,4		500 11,95-12,0
2a					480-540	2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)	⑥ Rotational-speed limitat Note changed to 1 rev/min	③a Fuel delivery characteristics	Starting fuel delivery Idle	⑤ Idle stop Control rod travel mm	④a		
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	control rod travel mm
LDA	0,7 bar	1145-1150*		100	155,0-185,0	400	6,3
1100	109,0-111,0	(1140-1160)		400	135,0-175,0		
500	122,0-125,0			1200	25,8 - 35,0		
	0 bar						
550	70,5-76,5 (increase by + 2,0 cm³!)						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4

1. Edition

En

PES 6 P 110 A 720 RS 352 RQV300/600 - 1050 PA 359 KR

supersedes

-

Mack  
ET 673  
(260 HP)

359 KR = dimension PLE - 685-745 inch.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12,0	15,8-16,4	0,4			
300	6,0	0,7- 2,7				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

... 359 KR

Upper rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Intermediate rated speed			Lower rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Sliding sleeve travel ①	
			①a	②a	④				⑧	⑨
ca.68	1050	16,4-18,8	-	-	-	ca.19	250	9,8-11,5	300	0,8-2,1
	1150	4,2-10,0					400	2,2- 5,2	400- 550 =	2,9-4,4
	1200	0- 5,6					700	0,8- 2,0	900	5,8-6,2
	1260	0					830	0	1050	7,9

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	②b	④a	⑤b	⑥	⑤
1	2	3	4	5	6	Control rod travel mm
1050	173 - 175	1090-1100*	750	168,0-172,0	100	110,0-170,0
			500	134,0-140,0	300	19,0- 39,0
					1155	29,0- 59,0
						500
						11,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.77

BOSCH

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 IHC 7,6 a  
3. Edition

En

PES 6 MW 100/320 RS 1504

supersedes 3.80  
company IHC  
engine DT 466

RSV 350 ... 1250 MW 2/305 R DHK 1 688 901 016

0 403 476 004

207 + 3 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,20-3,30

Port closing at prestroke (3,15-3,35)

mm (from BDC)

10,5 mm RW

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	7,3 <sup>+0,2</sup>	7,7 - 7,9	0,3(0,5)			
350	5,5-5,7	1,8 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in □

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed 4	5	6	④ Lower rated speed Control lever deflection in degrees 7	rev/min	Control rod travel mm	③ Torque control Control rod travel rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.32	350	5,6	1100	7,3 - 7,5
ca.60	1300-1310= 6,4						100	min.19	1000	7,8 - 8,0
②a	1360-1390= 3,1						350	5,5-5,7	800	8,5 - 8,7
	1450= 0,3- 1,7						430-490 = 2,0		500	8,6 - 8,8

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min	⑥ Rotational-speed limit Note changed to rev/min 3	③a Fuel delivery characteristics rev/min	Starting fuel delivery Idle rev/min	⑤ Idle stop Control rod travel mm	④a Idle stop Control rod travel mm
1	2	4	6	7	8
1250	69,0-71,0 (68,0-72,0)	1300-1310*	1000 76,0-78,0 (75,0-79,0) 82,5-84,5 800 (81,5-85,5)	100 min. 140 350 18,0-22,0 (17,0-23,0) 1375 25,0-37,0 (24,0-38,0)	350 5,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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1.84

K10  
K10

# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

VDT-WPP 001/4

6. Edition

En

PES 6 P 100 A 720 RS 1010

EP/RSV 400-1050P2/367 DR

supersedes 12,74 (4)  
company John Deere  
engine 6531 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) nm
1	2	3	4	2	3	6
1050	12,5	14,2-14,4	0,3			
400	6,7	2,1- 2,7				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

EP/RSV .. 367 DR

① Upper rated speed rev/min Degree of deflection of control lever	Intermediate rated speed			④ Control lever deflection in degrees	Lower rated speed		③ Torque control rev/min	Control rod travel mm
	Control rod travel mm	Control rod travel mm	rev/min		Control rod travel mm	rev/min		
ca.43	1050	15,6-16,4	without auxiliary spring	ca.19	400	7,2	1050	0
	1100	6,2- 9,8			200	19 - 21	750	0,8 - 1
	1150	3,8- 5,2			350	11,2-14,0		
	1220	0,3- 2,6			400	7,2	500	0,8 - 1
②a	1260	0,3- 1,5			500	4,8- 5,9		
					750	0,2- 1,2		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40 °C (104°F)	⑥ Rotational-speed limit Note changed to 1 rev/min	③a Fuel delivery characteristics	Starting fuel delivery Idle	⑤	④a Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	rev/min
1	2	3	4	6	8
1,0	bar				
1050	142 - 144	1085-1095	750 550 XX	159 - 162 0 bar 108 - 116	100 400 1155
					160,0-190,0 21,0-27,0 15 - 35

Checking values in brackets

\* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

EP/RSV .. 367 DR

**B. Governor Settings**

Degree of deflection of control lever 1	1 Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed rev/min		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		Control rod travel mm	rev/min	Control rod travel mm	rev/min
ca.38	1040	16,0	without auxiliary spring	ca.17	400	7,2	1050	0		
	1080	11,5			200	19 - 21				
	1220	4,6			400	6,9-7,5	800	0,6-0,8		
	1050	ca.11,0	with auxiliary spring	550	550	3,2-5,1	500	0,8-1,0		
	1155	ca. 4,7			780	0 - 1				
	1280	0,3 - 1,0								
(2a)										

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop		6 Rotational-speed limitat.	3a Fuel delivery characteristics		Starting fuel delivery		5	4a	Idle stop	
Test oil temp. 40°C (104°F)	rev/min	Note: changed to ...)	rev/min	rev/min	cm³/1000 strokes	Idle	rev/min	rev/min	Control rod travel	mm
LDA	0,9 bar			LDA	0 bar					
1050	142,0-144,0	1085-1095*	550	108,0-116,0	100	160 - 180				
750	156,0-160,0		1155	24,0 - 44,0	400	21,0-27,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**B. Governor Settings**

Degree of deflection of control lever 1	1 Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed rev/min		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		Control rod travel mm	rev/min	Control rod travel mm	rev/min
(2a)										

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop		6 Rotational-speed limitat.	3a Fuel delivery characteristics		Starting fuel delivery		5	4a	Idle stop	
Test oil temp. 40°C (104°F)	rev/min	Note: changed to ...)	rev/min	rev/min	cm³/1000 strokes	Idle	rev/min	rev/min	Control rod travel	mm

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

K12

K12

## D. Adjustment Test for Manifold Pressure Compensator

Ppe 1010

-3-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel: mm	diminution difference (1)
1010 with 367DR:	0,55	0,20		-0,2 mm -1,9 mm

Notes

(1) when n = 500 rev/min and gauge pressure 1,0 bar (= maximum full-load control rod travel)

Testoil-ISO 4113

K13

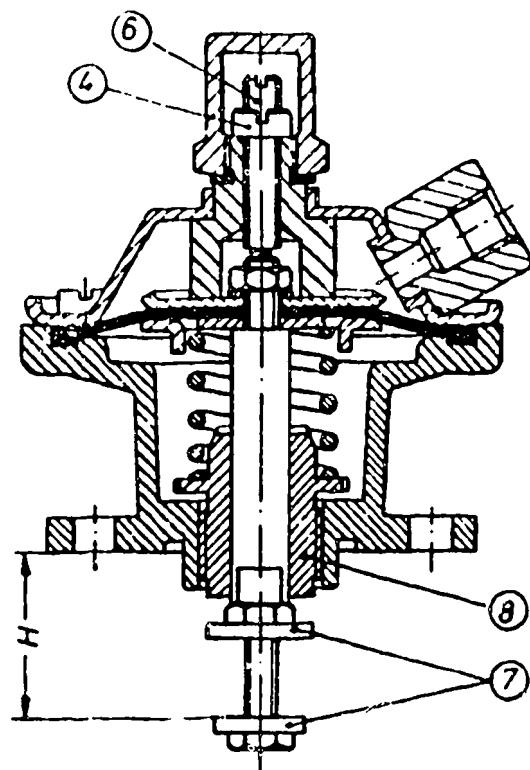
En

K13

Test sequence:

1. Basic setting of pump and governor (Section A-B) without manifold-pressure compensator.
2. Adjust full-load delivery - delivery indication max. charge-air pressure - with full-load stop screw of governor. Measure fuel-delivery characteristics at 750 rpm; correct if necessary with torque-control retainer.
3. Pre-adjustment of manifold-pressure compensator: set dimension H - contact surface to lower stop screw (Item 7) -: Screw in adjusting screw in cover until this causes the diaphragm to be lifted off by 0.5 mm (delivery correction possibility during induction); counterhold screw during this operation to prevent diaphragm damage (items 4 and 6).
4. Fit manifold-pressure compensator taking care to ensure that bell crank is positioned between washers of lower stop screw. To do so, move bell crank sideways and position approx. 45° upwards. Pay attention to O-ring! As a check, actuate stop lever - full-load control-rod travel must be set. If starting travel is attained, bell crank is not properly in position. If less than full-load control-rod travel is attained, enlarge dimension H accordingly.
5. Connect compressed air - adjustment test at 500 rpm: test start and end, correct at guide bushing of helical spring. Establish control-rod-travel difference (Item 8).
6. Measure induction delivery (0 bar) - correct if necessary in accordance with Item 3!
7. Check/adjust full-load delivery, engine-speed limitation, idle and starting fuel delivery.

\* Dimension H  
370 DR = 33.3 mm



# Test Specifications

## Fuel Injection Pumps ①A

### and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 8 P 100 A 921/5 RS 286 EP/RSV 350-1200 PO/394 DR  
s.WPP 110/2, 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°!

supersedes  
company  
engine

IHC - USA  
DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,8+0,1

mm (from BDC)

(Checking) + 0,15)  
- 0,05

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	8,6	9,5-9,7	0,4			
350	5,6	1,65-2,25	0,6			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

PO/392 DR

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	10	Control rod travel mm
ca.49	1300	9,5-11,2	without auxiliary spring	ca.26	350	6,0	1180	0	0,5	0
	1350	4,8-8			150	19-21				
	1250	13-14			350	6,0				
	1390	1,2-5,4	with auxiliary spring		300	7,4-8,2	500	0,5-0,8	0,5-0,8	0,5-0,8
	1200	15,8-16,2			400	3,2-4,4				
	1440	1,2-2,0			470	1,2-2,0				
2a										

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop		6	Rotational-speed limitat		3a		Fuel delivery characteristics		Starting fuel delivery Idle	5	4a	Idle stop	
	Test oil temp 40°C (104 F)	rev/min		cm³/1000 strokes	rev/min	Note changed to )	rev/min	cm³/1000 strokes	rev/min				rev/min	control rod travel mm
1200	95,0-97,0		1250-1260		1310	(1245-1265)		13,0-33,0		100	min. 170			
850	101 - 107		(99 - 109)							350	16-23			

Checking values in brackets

\* 1 mm less control rod travel than col 2

K15  
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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

VDT- WPP 001/4

1. Edition

En

PES 8 P 100 A 921/5 RS 286 EP/RSV 350-1050 PO/409 DR

s. WPP 110/2, 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°!

supersedes  
company  
engine

-  
IHC - USA  
DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke		mm (from BDC)		(Checking + 0,15) - 0,05)	
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes
1050	9,8	11,1-11,3	0,3		
	350	5,4			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

P 0/409 DR

① Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed		③ Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 49	1050	15,7-16,3	without auxiliary spring	ca. 26	350	6,0	1030	0	1,3-1,4	
	1150	6,6-9,4			150	19-21				
②a	1100	11,8-13	with auxiliary spring		200	11,4-21	670	1,3-1,4	1,3-1,4	
	1200	1,0-5,2			350	6,0				
②a	1240	1,0-2,0			430	1-2	500	1,3-1,4	1,3-1,4	
					300	8,2-9,6				

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

②b Test oil temp. 40°C (104°F)	Full load stop		⑥ Note changed to rev/min	③a Fuel delivery characteristics	Starting fuel delivery Idle	⑤ rev/min	④a Idle stop		
	rev/min	cm³/1000 strokes						rev/min	Control rod travel mm
1050	111,0-113,0 (109,0-115,0)	1090-1100*	750	123,0-127,0 (121,0-129,0)	100 350	min.170 16 - 23		1150	15,0-35,0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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①

# Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 6 P 110 A 320 RS 317 RQV 375-1100 PA 200 KR

supersedes -  
 company: Allis Chalmers  
 engine Typ: 11 000

Test instructions for RQV ... K governors WPP 001/4-3rd supplement  
 -Testing with EFEP 182 ("S-nozzles")

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**Testoil-ISO 4113**

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

(Checking + 0,15)  
- 0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	10,7	13,8-14,0	0,4			
	4,5	1,0- 1,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed			Lower rated speed Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel rev/min 10	mm 11
			Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6					
ca.66	1100 1140- 1215- 1300	15,2-17,8 1150 1245 0- 1,0	-	-	-	ca.20	375 100 320- 520 530- 590	4,4-4,6 min.14 520 2,0	300 400 800 1130 1300 end 1390	0 - 1,4 2,8-3,4 5,0-5,4 830 1390 (11)

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed rev/min 3	Fuel delivery characteristics high idle speed (5a) rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel Control rod travel rev/min 8
1	2	48	5	5a	6	7	5
LDA 1090 600	0,6 bar 138,0-140,0 150 - 154	1140-1150*			100 375	95-135 10,0-16,0	1090 600 11,1-11,2
					Charge-over point 200	300U/min	./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K17

K17

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# ① Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 40

1. Edition

PES 6 P 110 A 320 RS 318 RQV 300-1025 PA 173 KR

En

supersedes  
company Allis Chalmers  
11 000  
engine.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,8 + 0,1 mm (from BDC) (+ 0,15)  
(- 0,05)

Port closing at prestroke

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1015	8,7	9,0-9,2	0,4			
300	5,3	1,9-2,5				

Adjust the fuel delivery from each outlet according to the values in

RQV 300-1025 PA 173 KR

RQV 300-1000 PA 217 KR

## B. Governor Settings

Upper rated speed			Intermediate rated speed				Lower rated speed			Sliding sleeve travel		
Degree of deflection of control lever	rev/min	Control rod travel mm	① 1a	Degree of deflection of control lever	rev/min	Control rod travel mm	④ 4	Degree of deflection of control lever	rev/min	Control rod travel mm	③ 3	① 1
1	2	3	② 2a	4	5	6	⑤ 5	7	8	9	⑩ 10	mm 11
ca.66	1025	15 -17,8						ca.10	300	5,2-5,4	380	1,8-2,6
	1300	0 - 1,0							100	min.6,8	550	3,8-4,6
1055-									400-	2,0	1000	7,5-7,9
1065		7,7							460			
1095-									320-	--		
1125		4,0							390			

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	④ 4a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
318	173 KR:					100	95 - 135	1015	8,65-8,75
1015	90,0-92,0	1055-1065				300	19,0-25,0	700	9,35-9,45
700	93 - 97								

Change-over point  
150-250 min⁻¹

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.75

K18 X48 BOSCH

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①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

40

1. Edition

PES 6 P 110 A 320 RS 318

300-1000 PA 217 KR

En

supersedes  
company.  
engine

-  
Allis Chalmers  
11 000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8 + 0,1$  mm (from BDC)  $(+ 0,15)$  -  $0,05$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	10,0	12,0-12,2	0,4			
	5,3	1,8- 2,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

RQV 300-1025 PA 173 KR

RQV 300-1000 PA 217 KR

Upper rated speed Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel rev/min 10	mm 11
ca.66	1000	15,2-17,8	-	-	-	ca.10	300	5,2-5,4	380	1,8-2,6
	1030						100	min 6,8	550	3,8-4,6
	1040						400-		1000	7,5-7,9
	1085	9,0					460	2,0		
	1115	4,0					320-	--		
	1250	0,0-1,0					390			

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed rev/min 3	4a	Fuel delivery characteristics high idle speed rev/min 4	5a cm³/1000 strokes 5	Starting fuel delivery idle switching point rev/min 6	cm³/1000 strokes 7	6 Torque-control travel rev/min 8	5 Control rod travel mm 9
318 / 217 KR: 990 700	120-122 121-125	1030-1040*				100 300	95,0-135,0 18,0- 24,0	990 700	10,0 9,95-10,15

Change-over point 150-250 mm<sup>-1</sup>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.75

BOSCH

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K19

K19

# **Test Specifications Fuel Injection Pumps ① and Governors**

VDT-WPP 001/4 40

2. Edition

PES 8 P 100 A 921/5RS 286

RQV 300-1300 PA 304 KR

**supersedes** —

company IHC - USA  
engine DVT 800

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je  $45^\circ$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### **A. Fuel Injection Pump Settings**

#### **Port closing at prestroke**

2,8+0,1

mm (from BDC) (+0,15 -0,05 - Checking )

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1300	10,2	11,4-11,6	0,3			
300	5,0	1,7- 2,1	0,3			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

RQV . . 304 KR

Upper rated speed			Intermediate rated speed				Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm	
1	2	3	4	5	6	7	8	9	10	11	
ca.66	1320 1400 1520 1640	15,0-17,5 9,5-13,7 0,0- 7,3 0	- - - -	ca.10	100 400 540 680 300	7-8 2,2-3,8 0,2-1,3 0 4,1-6,2	250 500 800 1320 1520- 1640	0,4-1,4 2,8-3,4 4,4-4,8 8,2 end (11)			

Torque control travel  $s =$  mm

### **C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics	Starting fuel delivery	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	high idle speed	idle switching point	Control rod travel
1	2	3	4	5	6
LDA	0,85 bar				
1300		1340-1350*		100      180-230	1300      10,2
	114 - 116			300      17- 21	900      10,4
	(112 - 118)	(1335-1355)			700      10,1
900	118 - 124			Change-over point 170-240 min⁻¹	
800	84 - 88				

### **Checking values in brackets**

\* 1 mm less control rod travel than set 2

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 8 P 100 A 921/5 RS 286

RQV 300-1300 PA 305 KR

supersedes

company

engine

I H C - U S A

DVT 800

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+ 0,15 - 0,05 - Checking)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1300	9,5	10,7 - 10,9	0,4			
300		1,5 - 2,1	0,3			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

RQV .. 305 KR

Upper rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Intermediate rated speed			Lower rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Sliding sleeve travel	
			1a	2a	4				3a	10
ca.66	1320	15,0-17,5	-	-	-	ca.10	100	7 - 8	250	0,4-1,4
	1400	9,5-13,7					400	2,2-3,8	500	2,8-3,4
	1520	7,3					540	0,2-1,3	800	4,4-4,8
	1640	0					680	0	1320	8,2
							580	0 - 1,1	1520	end
							300	4,1-6,2	1640	(11)

Torque control travel a = mm --- Sect. C, Col. 8

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)	rev/min	cm³/1000 strokes	Rotational-speed limitation intermediate speed		Fuel delivery characteristics		Starting fuel delivery Idle switching point	rev/min	cm³/1000 strokes	Torque-control	
			2b	4a	5a	5b				6	5
LDA	0,85						100	190 - 230		1300	9,5
1300	107-109		1340-1350*				300	15 - 21		850	11,9
850	128-134		(1335-1355)							700	10,5
800	83-91										

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.75

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# ① Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 8 P 100A 921/5RS 286 RQV 300-1300 PA 308

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

supersedes:

company: I H C - U S A  
engine DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1 mm (from BDC) (+ 0,15  
- 0,05 -Checking)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,15-	13,8-14,0	0,4			
	12,25 5,0	1,6- 2,0				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

RQV ..308 KR

Upper rated speed Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed			Lower rated speed Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel rev/min 10	mm 11
			Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	④				
ca.66	1320 1400 1520 1640	15,0-17,5 9,5-13,7 0- 7,3 0	-	-	-	ca.10	100 400 500 580 680 300	7 - 8 2,2-3,8 0,8-2,1 0 - 1,1 0 4,1-6,2	250 500 800 1320 1520 1640	0,4-1,4 2,8-3,4 4,4-4,8 8,2 end (11)

Torque control travel a = mm  
--- Sect. C, Col. 8

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min 3	Fuel delivery characteristics high idle speed ⑤a rev/min 4		Starting fuel delivery idle switching point ⑥ rev/min 6		Torque-control travel Control rod travel mm 5 rev/min 8
1	2	④a rev/min 3	5 cm³/1000 strokes 4	7 cm³/1000 strokes 5	7 cm³/1000 strokes 6	8 cm³/1000 strokes 8	
LDA 1300 900 800	0,85 bar 138 - 140 132 - 138 86 - 97	1340-1350*			100 300	190 - 230 16 - 20	1300 900 700
						Change-over point 170-240 min⁻¹	12,2 11,7 11,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# ① Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

40

2. Edition

En

PES 8 P 100 A 921/5RS 286 RQV 300-1300 PA KR 309..

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

supersedes  
company 1 H C - U S A  
engine DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1 mm (from BDC) (+0,15  
-0,05 Checking )

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	11,3	12,9-13,1	0,4			
300		1,7- 2,3				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQV..309 KR

Upper rated speed Degree of deflection of control lever	Control rod travel rev/min	Intermediate rated speed Degree of deflection of control lever	Control rod travel rev/min	Lower rated speed Degree of deflection of control lever	Control rod travel rev/min	Sliding sleeve travel rev/min				
1	2	3	4	5	6	7	8	9	10	11
ca.66	1320	15,0-17,5	-	-	-	ca.10	100	7 - 8	250	0,4-1,4
	1400	9,5-13,5					400	2,2-3,8	500	2,8-3,4
	1640	0					540	6,2-1,3	800	4,4-4,8
	1520	0 - 7,3					680	0	1320	8,2
							300	4,1-6,2	1520	end
							580	0-1,1	1640	(11)

Torque control travel a = --- Sect. C, Col. 8 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)	Rotational-speed limitation Intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery Idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5
LDA	0,85 bar	1340-1350*		
1300	129 - 131			100 min 170
900	127,5-133,5			300 17 - 23
	0 bar			Change-over point 170-240 min⁻¹
800	103 - 111			1300 900 11,3 11,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.75

K23 BOSCH

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K23

# ① Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

1. Edition

En

PE 6 P 120 A 420 LS 314    RQV 300-950 PA, 314 KR

supersedes  
company  
engine

Allis Chalmers  
25 000

Testing with T nozzles and fuel lines 8x2x1000 according to WPP 110/2!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,8+0,1

mm (from BDC) + 0,15 - 0,05

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
950	9,6	20,4-20,6	0,6			
	4,8	1,75-2,35				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed Degree of deflection of control lever	rev/min	Control rod travel mm	Control rod travel mm	Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
				18	4	5	6	4	7	3	10
1	2	3	2a		4	5	6	4	7	8	9
ca. 66	950	15,2-17,5		-	-	-	-	ca. 10	270	5,8- 8	400
	1000	12 -15,1							350	3,0-5,2	550
	1100	4,5- 9,5							380	2,5-3,8	1000
	1150	0 - 6,6							400	2,2-3,8	1200
	1250	0									1290

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm³/1000 strokes	2b rev/min	5a rev/min	6 rev/min	5 Control rod travel mm
1	2	3	4	6	8
314 mit 314 KR: 950	204-206	990-1000*		100 300	750 950
750	194,5-197,5			130 - 170 17,5-23,5	9,7 9,6
				Change-over point 150-250 min⁻¹	./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.75

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

**40**

WPP 001/4

1. Edition

En

PES 6 P 110 A 420 LS 3037

RSV 425-1100 P2/424DR

supersedes  
company  
engine

IHC  
DTI-817C  
420 HP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke (1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1100	14,0	25,7 - 25,9	0,4			
	5,5	3,0 - 3,5				

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

1	Upper rated speed rev/min			Intermediate rated speed			4	Lower rated speed			3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min		4	Control lever deflection in degrees	rev/min	Control rod travel mm	Control rod travel mm rev/min		10	11	Control rod travel mm	
loose	1300	0,3-1,7	X=3,4		ca.21	425	5,5	1100	0	700	0,7-0,9		
	ca.43	1140-1150=13+0,5	1195-1225=4,0			100	20,0-21,0	200	11,0-21,0				
(2a)					430-490	490	2,0			500	0,7-0,9		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp. 40°C (104°F)	6	Rotational-speed limit Note changed to rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
LDA 1100 700	1,00 bar 257-259 264-270 0 bar	1140-1150*	LDA	1195-1225	1,00 bar 4,0 mm	100 425	180-205 33- 39		
800	149-157								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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10.79

64

L1

# Test Specifications Fuel Injection Pumps 1A and Governors

VDT-WPP 001/4  
Edition 29.8.74

**40**

PES 6A 90 D 420 LS 2461

RSV 375-1050 A2B567DR

supersedes 11.3.70, 10.2.71  
company Case 22.4.71  
engine A451ZDT

En

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15+0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,5	9,6-9,7	0,3			
375	7,4	15 - 22				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees	Lower rated speed		Torque control			
	1	2	3	4	5	6	7	8	9	10	11	
ca. 39	1100	10 - 11,4	without auxiliary spring	ca. 10	375	7,4	1050	0	0,2 - 0,3	900	0,2 - 0,6	
	1090	12,4-12,8			150	19 - 21		500				
(2a)	1280	0,2 - 1,2	with auxiliary spring		375	7,4	900	0,2 - 0,3				
	1130	6,2- 7,4			180	1 - 4		500	0,3 - 0,6			
	1200	1 - 3			600	0 - 1	320	11 - 13,6	15-22 cm³/1000 strokes	375	15-22 cm³/1000 strokes	
					320	11 - 13,6						

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limit	(3a) Fuel delivery characteristics		Starting fuel delivery		(5)	(4a) Idle stop	
Test oil temp 40°C (104°F)	rev/min	Note changed to rev/min	rev/min	cm³/1000 strokes	Idle rev/min	cm³/1000 strokes	5	rev/min	Control rod travel mm
rev/min	cm³/1000 strokes	3	4	5	6	7	8	9	9
1050	96 - 97	1090-1105	1150	12 - 18	100	12 - 13	375	15-22 cm³/1000 strokes	
750	99 - 102	*							
650	max. 102								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

VDT-WPP 001/4  
10. Edition

En

PES 4A 95 D 420 LS 3023 RSV 375-1100 A2B651DR

supersedes (9) 31.7.73  
company Case  
engine A 336 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke **2,0 + 0,1** mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1100	11,3	12,2-12,5	0,3			
375	5,9	1,7- 2,1				

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

EP/RSV .. 651 DR

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 38	1140	11 - 11,6	without auxiliary spring	ca. 16	375	5,9	1100	0		
	1180	4,6- 6,2			150	19 - 21	800	0,2-0,3		
	1300	0,3- 1,0			375	5,8-6,0	460	0,2-0,5		
(2a)	1220	1,2- 3	with auxiliary spring		450	1,4-3,4				
	1150	9-10,2			550	0 - 1				
					330	9,8-13				

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop		6	Rotational-speed limitat		3a	Fuel delivery characteristics		Starting fuel delivery Idle	5	4a	Idle stop
	Test oil temp 40°C (104°F)	rev/min		cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes				Control rod travel mm
1100	122	- 125	1140-1155*	1200	13 - 19		100	13 - 14	375	17-21		cm³/1000 strokes
750	122	- 128	(1135-1160)									
650	max.	126										
	(increase by 1,0 cm³!)											

Checking values in brackets

\* 1 mm less control rod travel than col 2

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63c

12.74

# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

VDT-WPP 001/4

4. Edition

En

PES 6 P 110 A 720 RS 296 EP/RSV 400-1050 P0/414 DR

supersedes 6.75  
company John Deere  
engine 6619 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1

mm (from BDC)

(Checking +0,15  
-0,05)

see page 3

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1050	12,8	18,7 - 19,0	0,2			
400	6,8	1,9 - 2,5				

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

EP/RSV .. P 0/396DR, 414 DR

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
	Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	
ca.39	1050	15,6-16,2	without auxiliary spring	ca.20	400	6,3	1050	19 - 21	1050	0	0
	1100	8,4-10,8			100			6,8			
2a	1150	3,6- 5,6	with auxiliary spring		400		680	520- 580	500	0,3-0,5	0
	1200	0,3- 2,9			520-						
	1250	0,3- 1,5			580						

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop	6	Rotational-speed limitat.	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop
rev/min	Test oil temp. 40°C (104°F)		Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	9
LDA	1,0 bar								
1050	187 - 190	1095-1105	1150	47 - 57		100	min.170	400	19-25
	(185 - 192)	(1090-1110)						cm³ / Strokes	1000
630	193 - 197								
	(191 - 199)								
550	112 - 120								

Checking values in bracket:

\* 1 mm less control rod travel than col. 2

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# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

VDT-WPP 001/4  
2. Edition

En

PES 6 P 100 A 720 RS 1010 EP/RSV 400-1050 P7/413DR

supersedes John Deere  
company 6531  
engine

**Testoil-ISO 4113**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,4+0,1 mm (from BDC) (+0,15)  
-0,05

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1040	13,1	14,9 - 15,1	0,3			
400	7,1	1,6 - 2,0	0,3			

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

EP/RSV .. P2/411D

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min
ca. 38	1070	12,1				ca. 17	400	6,7	1040	0	
	1110	4,9	without auxiliary spring				100	19 - 21	750	0,7	
2a							400	6,7			
							450-	2			
							500				

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp. 40°C (104°F)	6	Rotational-speed limitat Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
1	rev/min cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
LDA 1040 750	0,9 bar 149 - 151 163,5-166,5 (increase by + 2,0 cm³ !)	1065-1075	1100	23 - 33		100	min.170	400	16 - 20 cm³ / 1000 Strokes

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.77

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# Test Specifications Fuel Injection Pumps 1A and Governors

**40**

VDT-WPP 001/4

4. Edition

En

PES 6 P 110 A 720 RS 305 EP/RSV 400-1050 P2/415DR

supersedes 6.75

company John Deere  
engine 6619

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

(Checking  $+0,15$ )  
 $-0,05$

see page 3

**Testoil-ISO 4113**

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	11,7	16,0-16,2	0,4			
400	6,3	1,9-2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSV .. P 0/396DR, 414 DR

① Upper rated speed rev/min Degree of deflection of control lever 1	Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control Control rod travel rev/min mm 10 11
	Control rod travel mm	Control rod travel mm rev/min	4 5 6		rev/min	Control rod travel mm	
ca.39	1050 1100 1150	11,7 10,7 6,0	without auxiliary spring	ca.20	400 100 400 570 630	6,1 19 - 21 6,1 2,0 2,0	1050 730 650
2a							0 0 0,5 - 0,7

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes		⑥ Rotational-speed limitat Note changed to rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle rev/min cm³/1000 strokes	⑤	④a Idle stop Control rod travel rev/min mm	
1	2	3	4	5	6	7	8	9
LDA 1050 650	1,0 bar 160 - 162 170 - 174 0 bar	1095-1105	1150	47 - 57	100	min. 130	400 cm³ / 1000 Strokes	19 - 25
550	88 - 96							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5,76

①

# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4

1. Edition

En

PES 6 P 110 A 720/3 RS3036 RQV 300/600-900 PA453KR

supersedes -  
 company: Mack  
 engine ETA 676 E

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,40-2,50 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	14,4	19,3 - 19,5	0,4			
300	5,5	1,5 - 2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		① 1	① 10 rev/min	mm 11
Degree of deflection of control lever	rev/min	Control rod travel mm	① 1a	Degree of deflection of control lever	rev/min	Control rod travel mm	④ 4	Degree of deflection of control lever	rev/min	Control rod travel mm	③ 3	① 10 rev/min	mm 11
ca.66	970	16,2-17,8	-	-	-	-	ca.18	Set			300	1,2-2,4	
-----	-----	-----	-----	-----	-----	-----	-----	300	7,9-8,1		600	4,5-5,0	
ca.54	13,4	940 - 950						400	3,8-5,2		960	8,3	
	4,0	1100-1130						570-					
	0,1	1200						630=	2,0				
								250	9,8-11,3				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④ cm³/1000 strokes ⑤		Starting fuel delivery idle switching point ⑥ rev/min ⑥ cm³/1000 strokes ⑦	Torque-control travel ⑤ Control rod travel mm ⑧ rev/min ⑧		
1	2	3	4	5	6	7	8	9
LDA	1,6 bar				100	120 - 280	900	14,4
900	193-195				300	15,0-25,0	800	14,45-
600	230-234						700	14,65
	without pressure						600	14,7-14,8
600	129-132						500	15,2-15,3
								15,05

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10,70

L7

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# Test Specifications Fuel Injection Pumps 1A and Governors

**40**

WPP 001/4

1. Edition

En

PES 6 A 100 D 410 RS3027 EP/RSV 400-1100 A2B789DL

supersedes  
company John Deere  
engine 6466A

**Testoil-ISO 4113**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1,95-2,05(1,90-2,10)

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,9	10,7-10,9	0,3(0,6)			
400	+0,1 6,2-6,4	1,1- 1,5 C, 4-5	0,3(0,5) 0,4(0,7)			
525/550	-					

Port closing mark cyl. 1 : 15° after port closing

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Degree of deflection of control lever 1	1 Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0				ca.30	400	6,3	1100	0
	X	= 5,75					100	19 - 21		
ca.72	1100	15,7-16,3					400	6,2-6,4	525	1,45
	1200	6,2- 9,4					480-600	1,8-4		
2a	1250	1,4- 5,4					550	0-1		
	1350	0,3- 1,7					320	10,6-13,2		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat Note changed to ) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle	5	4a Idle stop	
rev/min	cm³/1000 strokes	3	rev/min	cm³/1000 strokes	6	7	rev/min	Control rod travel mm
1100	105 - 110 (103 - 112)	1145-1155 (1140-1160)	1200	20,5 - 35,5	100	150-180	400	11-15 cm³ / Strokes
525	116 - 119							1000
550	82 - 86							..

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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5.79

# Test Specifications

## Fuel Injection Pumps **1A**

### and Governors

**40**

VDT-WPP 001/4

1. Edition

En

PES 6 A 100 D 420 LS3024 EP/RSV 375-1050 A2B785DR

supersedes Case  
company A 504 BDT  
engine (210 BHP)

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,2 (+0,1) 6,2 (±0,1)	14,3-14,6	0,3(0,6)			
375		1,55-2,15	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1	Upper rated speed rev/min		Intermediate rated speed			4	Lower rated speed		3	Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min
ca.42	1085 1100 1140	11,6-12,4 10 - 11 5,8 - 7	without auxiliary spring	ca.22	375 150 375 450 550 280	6,2 19 - 21 6,2 2,4-4,2 0 - 1 10,4-12,8	1050	0	700 500	0,1-0,3 0,1-0,3	
2a	1180 1250	2,2-4 0,2-1,2	with auxiliary spring								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limitat Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	rev/min	7	8	9
1050	142 - 147 (140 - 149)	1090-1100*	1165	25 - 31		100	130-140	375	6,1
700	143 - 148 (141 - 150)	(1085-1105)							
600	max 147								

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.76

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L9

L9

# Test Specifications Fuel Injection Pumps 1A and Governors

**40**

WPP 001/4

2. Edition

En

PES 6 A 100 D 410 RS3025 EP/RSV 400-1100 A2 B765DL  
Test-pressure line 6 x 2 x 600  
Inlet pressure 1.5 bar  
Manifold-pressure compensator (LDA) adjustment page 2

supersedes -  
company John Deere  
engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,00-2,10

Port closing at prestroke (1,95-2,05)

mm (from BDC)

Port closing mark cyl. 1 : 14° after port closing

Rotational speed rev/min	Control rod travel mm	Fuel delivery with 765 DL cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1100	10	10,4-10,6	0,3(0,6)			
	(+0,1) 6,3 (-0,1)	1,2-1,6	0,3(0,5)			
750/550-	Sect. C, Col. 4-5		0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

400-1100 A2B765DL

① Upper rated speed rev/min Degree of deflection of control lever 1	Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control Control rod travel (+0,1) rev/min		
	Control rod travel mm	Control rod travel mm rev/min	4		8	9			
ca. 43	1100	15,7-16,3	without auxiliary spring	ca. 21	400	6,3	1100	0	
	1110	15 - 15,8			200	19 - 21			
	1200	6,5- 9,5			400	6,2-6,4			
	1350	0,3- 1,7			480	2,0- 4			
②a	1270	0,6- 4,2	with auxiliary spring		340	9,5-12			
					600	0 - 1			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40 °C (104°F) rev/min	cm³/1000 strokes	⑥ Rotational-speed limitat Note changed to rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle rev/min	⑤	④a Idle stop Control rod travel mm
			4	5			
LDA 1100	0,8 bar 103 - 107 (101 - 109)	1145-1155 (1140-1160)	1200	26,5-36,5	100	155-175	400 6,3
750	112 - 117						
550	61 - 68						

Checking values in brackets

see page 2

\* 1 mm less control rod travel than col 2

9.76

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L10

# Test Specifications

## Fuel Injection Pumps 1A and Governors

40

WPP 001/4  
2. Edition

En

PES 6 A 100 D 410 RS3025 EP/RSV 400-1050 A2 B786DL  
Test-pressure line 6 x 2 x 600  
Inlet pressure 1.5 bar  
Manifold-pressure compensator (LDA) adjustment page 2

supersedes -  
company John Deere  
engine 6404 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,00-2,10

Port closing at prestroke (1,95-2,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) min
1	2	3	4	2	3	6
1050	11,1	11,45-11,65	0,3(0,6)			
	(+0,1) 6,6 (±0,1)	1,3 - 1,7	0,3(0,5)			

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control-lever deflection in degrees	Control rod travel mm	Control rod travel rev/min	Control rod travel mm
1	2	3	7	8	9	10
ca.43	1050	15,7-16,3	without auxiliary spring	ca.21	400	6,6
	1060	14,8-15,6			100	19-21
	1150	6,5- 9,5			400	6,6
	1210	1,2- 4,8			480	1,8-3,8
(2a)	1300	0,2- 1,2	with auxiliary spring		600	0,1
					340	9,6-11,6

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp 40°C (104°F)	6	Rotational-speed limitat Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	6	7	8	9
LDA	0,8 bar								
1050	113 - 117,5		1095-1105 (1090-1110)			100	155 - 185		
750	121 - 126			1150	22 - 32			400	6,3
550	49 - 55								

Checking values in brackets

see page 2

\* 1 mm less control rod travel than col 2  
9.76

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

40

1. Edition

En

PES 8 A 75 D 320 RS 2463 RQV 300-1500 AB 913 D (2)\*  
 Inlet pressure 2,5 bar (1)  
 See note 1,2,3 -page 3!

supersedes  
 company: IHC  
 engine: DV 550 C  
 (1 - 180 PS)\*  
 (2 - 160 PS)\*  
 (3 - 200 PS)\*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2,3)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,35	4,6 - 5,3	0,3			
	(±0,05)	4,35-4,95				
	10	0,1 - 1,5 -		-(cy 1.1- 4-6-7)		
300	9,3	3,6 - 4,6 -	-(cy 1.2- 3-5-8)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQV.. 913DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min	Control rod travel mm	① 18	Degree of deflection of control lever	rev/min	Control rod travel mm	④ 4	Degree of deflection of control lever	rev/min	Control rod travel mm	③ 3	Sliding sleeve travel ① 1
ca.68	1600	15,0-18,2	-	-	-	-	③a	ca.10	200	7,4-8,2	1600	8,3
ca.65	2000	0						450	2,7-3,4			
	1700	9 - 14						600	1,5-2,6			
	1800	3 - 9,5						870	0			
								300	5,4-7,3			

Torque control travel a = 0,3 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ Control rod travel rev/min mm ⑨	
rev/min 1	cm³/1000 strokes 2	rev/min 3	④a	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	rev/min 9
1500	49 - 51	1605-1615		1650	7 - 8 mm Change-over point 150-230U/min (130-250)	300	17 - 21 cyl.2-3-5-8	1500	0
100	46 - 49	7-8mmRW				300	0 cyl.1-4-6-7	1000	0,45- 0,65

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps 1A and Governors

**40**

VDT-WPP 001/4

2. Edition

En

PES 6 A 85 D 420 LS 2460 EP/RSV 375-1100A 2 B 636 DR

supersedes 22.3.73

company Case  
engine 504 BD

**Test with case overflow valve!  
Pay attention to special governor setting!**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	12,8	9,2 - 9,3	0,3			
	7,9	1,8 - 2,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1	Upper rated speed rev/min	Intermediate rated speed	4	Lower rated speed	3	Torque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Control-lever deflection in degrees	Control rod travel mm	Control rod travel mm	Control rod travel mm
ca.47	1150	11,4-12,4	ca.23	375	7,9	1100 0
	1180	6,4- 8,4		150	19 - 21	900 0,7-0,8
2a	1140	12,6-13,3		375	7,7-8,1	
	1220	1,6- 4,4		620	0 - 1,0	500 0,9-1,0
	1300	0,3- 1,0		280	11,8-14	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b	Full-load stop Test oil temp. 40°C (104°F)	6	Rotational-speed limitat Note changed to ) rev/min	3a	Fuel delivery characteristics	Starting fuel delivery Idle	5	4a	Idle stop Control rod travel mm
rev/min	cm³/1000 strokes	3	rev/min	4	cm³/1000 strokes	rev/min	7	8	9
1100	91 - 94	1140-1155*	1200	14 - 20		100	12,5-13,5	375	18-24 cm³/ 1000 strokes
750	102 - 107								
650	max. 106								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.74

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